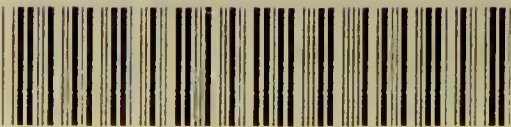


BRITISH · VIOLETS

E · S · GREGORY



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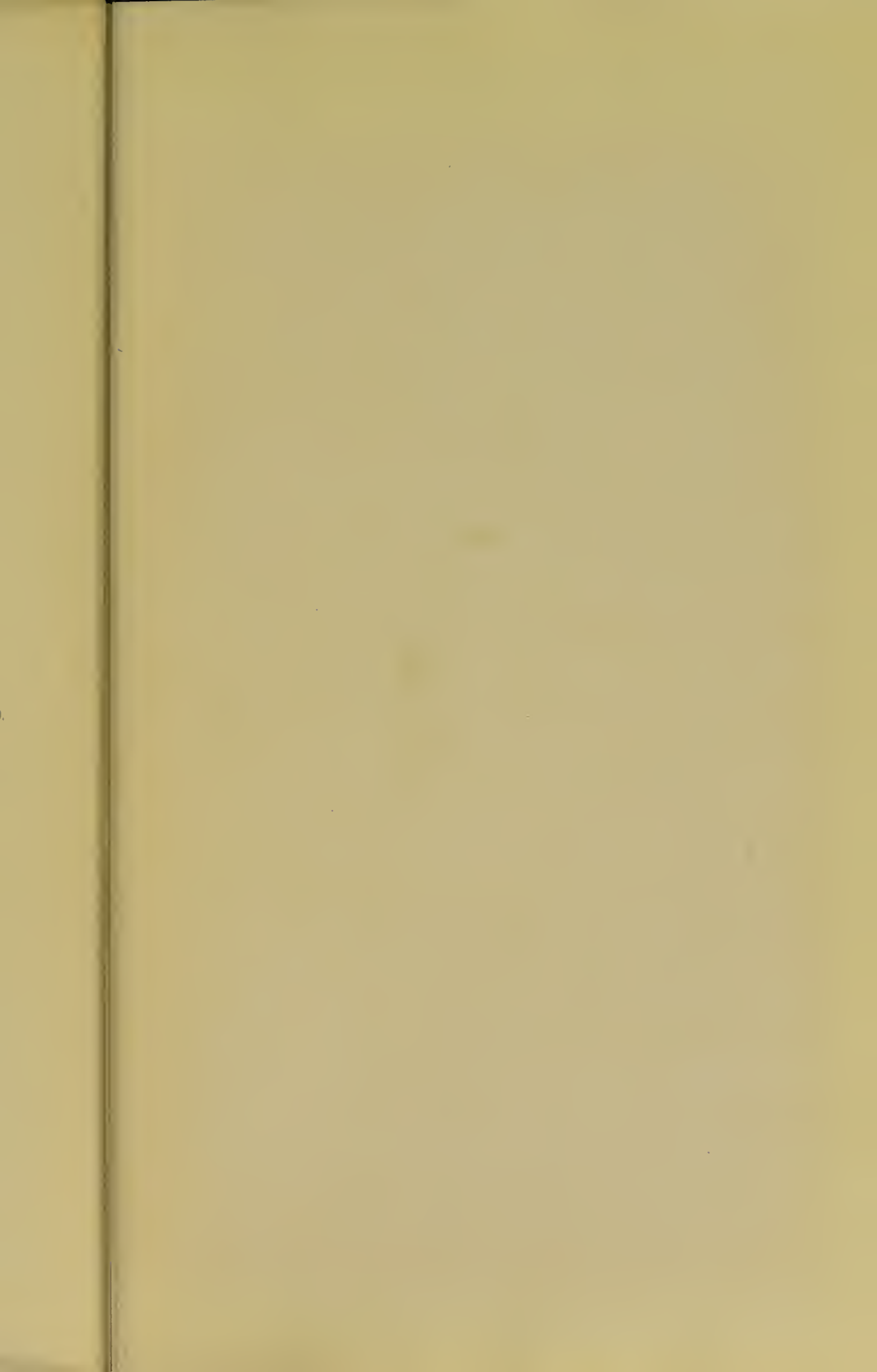
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BRITISH VIOLETS



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V. RIVINIANA, REICHB. VAR. DIVERSA, GREGORY.

(No. 1483 Herb. Gregory.)

BRITISH VIOLETS

A MONOGRAPH

MRS. E. S. GREGORY

WITH AN INTRODUCTION BY

G. CLARIDGE DRUCE, M.A., F.L.S.

CAMBRIDGE :

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INTRODUCTION

The genus *Viola*, which Mrs. Gregory has been assiduously studying for many years, offers in many ways exceptional difficulties to the systematic botanist. In the first place, its excessive variation, in part and perhaps chiefly owing to hybridisation, and also to the varied habitats they occupy, has been a stumbling block to botanical authorities. The history of these variations, notwithstanding the teeming binomials in which the genus abounds, has hitherto been but very imperfectly understood, and the influence of soil and environment has not been adequately appreciated. Even now, as the authoress would be the first to admit, there is an immense work to be done in studying the life history of the various species, in artificially producing the numerous hybrids, and in careful comparative cultivation; this monograph by Mrs. Gregory has, however, distinctly advanced our knowledge of the genus, since the various forms described have been carefully studied, not only on the sheets of Herbaria, but in living specimens both in the field and in cultivation.

A few details of the chronological history of the Violets as included in the various works on British botany may not be unwelcome.

The Sixteenth Century gave us in the pages of Lobel's '*Nova Stirpium Adversaria*' (266, 1576) a reference to *Viola purpurea*, the Sweet Violet, "*Angliae horti delitiis, ediumque; ornamento, olfactorio et olfactoriolis alūt,*" and a '*varietas,*' "*Quaemadmodum loci et frequentis transmotionis occasione, flores majores, colorationes, & semina nulla edit; sic in nemorosis, vmbrosis, frigidarum regionum, qualis Anglia,*

BRITISH VIOLETS

Belgia, vel calidiorum mōtibus arduis . . ." which doubtless refers to *Viola Riviniana*. In Gerard's 'Herbal' (p. 701, 1597) is to be found a reference to the "Wilde field Violet with long leaues," of which he says: "I have found another sort growing wild neere vnto Blackeheath by Greenewich at Eltham parke, with flowers of a bright reddish purple colour." This may be conjectured to have been either a form of *Viola canina* or *V. Riviniana*. He describes *V. nigra sive purpurea* and *flore albo*, which refer to the Sweet Violet that "groweth in gardens almost euery where," but, as is the case with Lobel, he gives no native habitat.

During the Seventeenth Century four species are added, namely, *Viola purpurea*, between Gravesend and Rochester, by which is meant *Viola odorata*; this is given in a small work entitled 'Iter Plantarum Investigationis . . . in Agrum Cantianum,' published by Thomas Johnson in 1629, the compiler afterwards editing, and indeed to a great extent re-writing, Gerard's 'Herball,' which was issued in 1633. A year previously, *i.e.* in 1632, Johnson printed a 'Descriptio Itineris Plantarum Investigationis . . . in Agrum Cantianum,' in which he includes "*Viola canina caerulea inodora sylvestris serotina*, Lob., in woods near to Feversham," which was probably the species now known as *Viola Riviniana*. Parkinson, in his gigantic work, the 'Theatrum Botanicum,' issued in 1640, includes "*Viola rubra striata Eboracensis*. Master Stonehouse, a reverend minister of Darfield in Yorkshire, assured me he found a kind of wilde Violet neare unto his habitation whose leaves were rounder and thinner then of others and the flowers reddish with sadder veines therein" (p. 755). This is *Viola palustris*, and a record overlooked by Plot, who in his 'Natural History of Oxfordshire' (p. 145, 1677) described it as a new species, although Morison in his 'Plantarum Historiae Universalis Oxoniensis' (p. 475, 1680) says that Bobart had discovered it "decennio abhinc." In 1666 Merrett published a small volume entitled 'Pinax Rerum Naturalium Britannicarum,' in which (p. 125) he

INTRODUCTION

records "*Viola fol; Trachelii serotina hirsuta radice lignosa*" from "Charlton Wood and in the lane leading to Sittingbourn" in Kent, which refers to *Viola hirta* L.

The Eighteenth Century afforded two species, namely, *Viola canina* L., which is recorded by Dillenius in the third edition of 'Ray's Synopsis' (p. 364, 1724) as "*Violae caninae varietatem* si non speciem diversam observavit D. Dubois . . . circa Mitcham" in Surrey; the second plant being *Viola lactea*, which is referred to in Withering's 'Botanical Arrangement of British Plants' (Vol. II. p. 262, 1796) as "*Viola canina* var. 3, found by Mr. Stackhouse at Pendarvis in Cornwall," and is described by Sir J. E. Smith in 'English Botany' under the figure t. 445, 1797, as *V. lactea* from Tunbridge Wells, where it was found by Mr. T. F. Forster.

During the Nineteenth Century three additions were made. The first was *Viola stagnina*, found by Mr. John Nicholson near Lincoln, and described as a state of *V. lactea* in the 'Annals of Natural History,' Vol. XI. p. 335, 1839. The second was *Viola arenaria* DC., which was discovered in 1861 by those excellent northern botanists, the Backhouses, on the interesting area of Upper Teesdale, and was recorded by Professor Babington in the 'Journal of Botany' (p. 325, 1863). The third species was the woodland plant *Viola Reichenbachiana* Jord.—the *Viola sylvestris* of Lamarck, which also probably included *V. Riviniana*. The restricted Jordanian species was first definitely recorded by Mr. A. G. More in the 'Report of the Thirsk Botanical Exchange Club' (p. 7, 1861). Babington's variety *calcareæ*, which was made up of two or more forms (see 'Manual of British Botany,' p. 35, 1847), was restricted and properly defined under the specific name *Viola calcarea* by Mrs. Gregory in the 'Journal of Botany,' p. 67, 1904.

The Twentieth Century has already shown that the elucidation of the British Violets has not been exhausted, for the authoress of this volume has added two species to the

BRITISH VIOLETS

list, although it may be confessed that the grade of these is not quite so high as some of the preceding plants.

The first of these additions is a very interesting plant, the name and status of which has led to considerable difference of opinion. Becker, the recent monographer of the genus, names it *Viola montana* L., which some authors dispute; in any case it seems to be certainly *V. nemoralis* Kützing, with which Becker thinks *V. montana* is synonymous. Mrs. Gregory discovered it in May 1905 in company with Mr. Hunnybun in Woodwalton Fen, Huntingdonshire, belonging to the Hon. N. C. Rothschild, and it is recorded in the 'Report of the Botanical Exchange Club' (p. 159) for that year.

The second plant, which, although closely related to *V. palustris*, is kept distinct in most European Floras, was detected by Mrs. Gregory in the Herbarium of Mr. W. F. Miller, where it was labelled *V. palustris*, gathered on Hamilton Tor, S. Devon, in 1885; there are earlier specimens, also under the same name, in other herbaria. This new species is *V. epipsila* Ledebour, and the writer went last year to Dartmoor in order to verify its occurrence there, and he has also found it in Berkshire, Hampshire, Carnarvonshire, at Killarney, and in Tyrone.

Another plant, which the Abbe Coste believes to be a species, is *V. pseudomirabilis* Coste, which was gathered at Killarney by the writer and other members of the International Phyto-Geographical Excursion in 1911, and identified by Prof. Graebner. It was recorded by Dr. E. A. Rübel in 'The New Phytologist' (p. 55, 1912), and is there given as *V. silvestris* var. *pseudomirabilis*, which is probably its correct position, although Becker ('Mon. Viol.' 129, 1910) considers it a hybrid of *mirabilis* and *Riviniana*. Up to the present time *V. mirabilis* L. has not been recorded for Britain.

We may also here include the names of the Violets as they are given in three of the British text-books of Botany, which will show how much more thorough and complete is

INTRODUCTION

the treatment given to this section in the present Monograph. When I was editing the thirteenth edition of Hayward's 'Botanist's Pocket Book,' I benefited much by Mrs. Gregory's assistance in giving me many of the descriptions.

SYME'S ENGLISH BOTANY.

Viola palustris L.

V. odorata L.

V. hirta L.

V. sylvatica Fries.

Sub-species *V. Riviniana* Reichb.

„ *V. Reichenbachiana* Bor.

V. canina Bab.

Sub-species *V. flavicornis* Sm.

„ *V. lactea* Sm.

V. stagnina.

V. arenaria DC.

HOOKE'S STUDENT'S FLORA OF THE BRITISH ISLES,

Ed. 3, 1884.

V. palustris L.

V. odorata L.

Probable hybrids: *V. permixta* Jord.

„ „ *V. sepincola* Jord.

V. hirta L.

V. calcarea Bab., 'a dwarf starved form with narrower petals.'

V. canina L.

V. canina proper (*flavicornis* Sm.)

Sub-species *V. lactea* Sm.

„ *V. persicaefolia* Roth. (*stagnina* Kit.)

V. sylvatica Fries.

V. sylvatica proper (*Riviniana* Reichb.)

V. Reichenbachiana Bor.

V. arenaria DC.

BRITISH VIOLETS

BABINGTON'S MANUAL OF BRITISH BOTANY,
Ed. 9, H. and J. Groves, 1904.

V. palustris L.

V. odorata L.

Species(?) allied to this:

V. permixta Jord.

V. sepincola Jord.

V. hirta L.

var. *calcareæ* Bab.

var. *glabrata* Beeby.

V. silvestris Reichb. = (*V. Reichenbachiana* Bor.)

V. Riviniana Reichb.

var. *nemorosa* (Neum. W. and M.)

V. rupestris Schmidt = (*V. arenaria* DC.)

V. canina L.

V. flavicornis Sm., a small form.

V. lancifolia Thore (*V. lactea* Sm.)

V. pumila Fries, not Vill.

var. *crassifolia* (Grönv.)

V. stagnina Kit.

Under *canina* Babington says of *V. flavicornis* Sm.:
"When the leaves are cordate-oblong it is perhaps *V. montana* L."

In passing one may refer to the generic name, which is a Latin word used by Virgil, adopted by Tournefort in his 'Institutes,' and is equivalent to the Greek Ion—Ancient Violet-crowned Athens. The genus, including the Pansies, numbers over three hundred valid species as enumerated in the Index Kewensis. In the second edition of the 'Species Plantarum,' published in 1762, Linnaeus only included twenty-four species. These are very rarely suffrutescent, and are mainly hardy perennials, almost restricted to the more temperate zones, a few being found in South America, three or four in S. and E. Africa, and about ten in Australia and New Zealand. To the horticulturist any members of

INTRODUCTION

the genus are valuable and interesting, while even our British species are pleasing adjuncts to a garden. From Shakespeare downwards the Violet has been favoured by the poets, and in connexion with it there is much interesting folk-lore.

We may congratulate Mrs. Gregory on being able to crown herself with such a fragrant chaplet as she has done in issuing to flower-loving folk this critical and stimulating treatise on a genus so popular and interesting.

G. CLARIDGE DRUCE.

YARDLY LODGE,
OXFORD.
August 1912.



PREFACE

This Monograph is the outcome of more than a quarter of a century's special attention to the *Nominium* section of the genus *Viola*.

The work has been possible, however, only during hours of recreation, for the writer has been a busy woman in every sense of the word. Odd moments have been seized for this beloved hobby from all sorts of necessary work. The old adage has still a grain of truth, "A man's work ends with the sun; A woman's work is never done."

The writer's special study of the violets had its beginning in N. Somerset, where the possession of a wild flower garden gave opportunities for watching the behaviour of many interesting forms under cultivation. Since then, many facilities for study have been enjoyed. In the National Herbarium Mr. Britten and Mr. E. G. Baker have been most kind in welcoming the writer, and Mr. Baker has rendered valuable assistance in many ways. Later, in the Cambridge University Herbarium, Professor Seward has been always ready to lend books, and Dr. Moss has given much helpful advice. To Mr. Daydon Jackson thanks are also due for allowing an inspection of the violets in the Linnaean Collection. In the Cambridge Botanic Gardens, Mr. Lynch has kindly allowed the writer to make some necessary experimental tests, especially with regard to the now exploded theory that *Violae* rely on their cleistogamous capsules only for fertile seed. ('Journ. Bot.', p. 155 (1907).)

Great assistance has also been afforded by numerous correspondents who have sent their spoils, fresh and dried, for identification and criticism. Especially to be mentioned

BRITISH VIOLETS

is my kind friend Mr. Druce, whose extended travels have enabled him to send violets of much interest and rarity from various parts of Great Britain and Ireland. Great thanks are also due to him for wading through my MS. when it consisted not only of the descriptions, which had been drawn up with great care, but of many fragmentary notes somewhat hastily thrown together. To Mr. Druce the writer is still further indebted for a considerable proportion of the Citations of Synonymy. Nor must the colleagues of earlier days be forgotten. I am one of the few remaining friends of the late Mr. T. B. Flower, who 'patronized' and encouraged me in the Eighties. The Rev. T. A. Preston, who sought my help when writing his 'Flora of Wilts,' is also kindly remembered. A good deal of correspondence anent violets passed between the late Mr. W. H. Beeby and myself, and I once spent a pleasant evening at his house at Walton-on-Thames. Much, perhaps most, of my inspiration and enthusiasm for botanical study was derived from my two friends, Mr. James Walter White and the late Mr. David Fry. Our walks and talks on the hill-sides and peat moors of Somerset, searching for that which meant more to us than the finding of gold, silver, and precious stones, are gratefully remembered. Our aim was not to leave a single plant unnamed as we went along, and this resulted in a knowledge of the flowers of the field, on the part of my friends, that I have never seen surpassed, and have rarely seen equalled.

Miss Livett, a most accurate observer, and Miss Peck, who has nothing short of genius for detecting rare plants, were often my companions in botanical excursions.

Since coming to reside in Cambridge my jaunts have been fewer, but in Mr. Hunnybun's company I have made some pleasant visits to Woodwalton Fen. Even so lately as June of the present year (1912) a day on the rough fen made me feel young again, in spite of my seventy odd years. A word of thanks here to the Hon. N. C. Rothschild, who so kindly placed a motor car at the service of the ladies of the party.

PREFACE

To him, naturalists owe a debt of profound gratitude. He has bought Woodwalton Fen, and has thus secured for the nation's use a piece of ground which contains plants unknown in any other part of our country, in addition to rare birds and insects. The fen violets during May and June are extremely beautiful, growing, as they do, in large clumps, and producing pale or darker blue flowers from the leaf-axils, on stalks over a foot in height. My visits to the fen have been too few to do more than a fragment of the necessary research, but I have every confidence that my small share of initiatory work will be improved upon in the future. Artificial crossing of some of the existing forms will throw light on the origin of those which have been produced by natural means.

A welcome development has taken place during the last decade in a greater rapprochement between 'Garret Botanists' (a name used by my late friend, Mr. T. B. Flower, to denote those botanists who are supposed to ignore plants in the field) and the large and ever increasing class of flower-lovers, who, in their turn, are dubbed 'mere Systematists,' and who are generally credited with knowing little or nothing of the physiology and anatomy of plant life.

To my helpers in the production of this small volume my cordial thanks are tendered. To Mr. A. H. Evans for his Latin diagnoses of my new varieties, *V. odorata*, var. *praecox* and *V. Riviniana*, var. *diversa*; to Miss Mills for her drawings; to Mr. Tams for the photographs; and to Mr. Wiltshire (of the British Museum) for correcting the proofs of the citations of synonymy.

To Mr. Robert Saunderson, of Galashiels, I am deeply indebted, for he has most generously financed the book through the press. And to my son, Mr. R. P. Gregory, I tender my hearty thanks for the inset drawings on pp. 12, 15, 38, 47, and 56, as well as for much help and patience in the final shaping of the work.

A table showing the order in which the species, their varieties and forms, are arranged, is set forth on pp. xxi-xxiii.

BRITISH VIOLETS

In its general lines the arrangement follows that of Borbás in Koch's 'Synopsis Deutsch. u. Schweizer Flora' (1892), but the omission of such Continental violets as have not been recorded for Britain necessitates some modification of Borbás' system.

The varieties and forms fall into place, naturally under their species, but there seems to be no absolutely logical position for the hybrids, unless a separate section be allocated to them, as is done by Becker in his 'Violenstudien.' This method has certain inconveniences, and is open to the objection that some of the plants are only putative hybrids, and their claims to be regarded as hybrids, rather than as varieties or forms, are not conclusively established.

The sort of difficulty which may arise in this connexion is exemplified by the supposed hybrid *V. canina* \times *lactea*, which was regarded by Watson as a variety of *V. lactea* (*V. lactea*, var. *intermedia* Watson). When hybrids occur between two species which come next to one another in the list, the natural position for the hybrids is between the parent species. But where intercrossing takes place between species not so closely related, this arrangement cannot be followed; in such cases I have placed the hybrids next in order to the parent which is first described.¹

¹ Except in the case of *V. lactea* hybrids, which are placed under the parent *lactea*.

CONTENTS

	PAGES.
INTRODUCTION - - - - -	v—xi
PREFACE - - - - -	xiii—xvi
SECTIO NOMINIUM GINGINS - - -	xxi—xxiii
BRITISH VIOLETS - - - - -	1—103
BIBLIOGRAPHY - - - - -	104
INDEX - - - - -	105—108



LIST OF ILLUSTRATIONS

	PAGE
<i>Viola Riviniana</i> , var. <i>diversa</i> - - -	Frontispiece
<i>V. odorata</i> , var. <i>praecox</i> (late leaves) - - -	3
<i>V. odorata</i> > \times <i>hirta</i> (= <i>V. sepincola</i> Jord.) - - -	10
<i>V. odorata</i> > \times <i>hirta</i> (stipule of) - - - -	12
<i>V. odorata</i> \times < <i>hirta</i> (= <i>V. permixta</i> Jord.), late leaf	14
<i>V. odorata</i> \times < <i>hirta</i> (stipule of) - - - -	15
<i>V. hirta</i> > \times <i>odorata</i> (= <i>V. collina</i> Besser) - - -	19
<i>V. hirta</i> (late leaf) - - - - -	21
<i>V. calcarea</i> - - - - - (facing)	26
<i>V. epipsila</i> - - - - -	32
<i>V. epipsila</i> , var. <i>glabrescens</i> - - - - -	35
<i>V. epipsila</i> , forma <i>minor</i> - - - - -	36
<i>V. silvestris</i> (spur) - - - - -	38
<i>V. silvestris</i> , var. <i>punctata</i> - - - - -	41
<i>V. silvestris</i> , var. <i>punctata</i> (late stage) - - -	43
<i>V. Riviniana</i> (stipules of) - - - - -	47
<i>V. Riviniana</i> (spur) - - - - -	47
<i>V. Riviniana</i> , f. <i>nemorosa</i> (spur) - - - - -	56
<i>V. Riviniana</i> , f. <i>nemorosa</i> - - - - -	57
<i>V. Riviniana</i> , f. <i>minor</i> - - - - -	64
<i>V. canina</i> > \times <i>Riviniana</i> - - - - -	68
<i>V. rupestris</i> (lower and upper leaf) - - - - -	70
<i>V. rupestris</i> , var. <i>arenaria</i> (leaves) - - - -	72
<i>V. canina</i> (stipules of) - - - - -	75
<i>V. canina</i> , var. <i>calcarea</i> - - - - - (facing)	77
<i>V. canina</i> , var. <i>pusilla</i> - - - - - (facing)	78
<i>V. canina</i> , var. <i>lanceolata</i> - - - - -	81
<i>V. canina</i> , var. <i>crassifolia</i> - - - - -	84
<i>V. canina</i> , var. <i>lucorum</i> (leaves of) - - - -	87
<i>V. lactea</i> \times <i>canina</i> (<i>V. lactea</i> , var. <i>intermedia</i>) -	93
<i>V. lactea</i> , var. <i>pumiliiformis</i> - - - - -	93
<i>V. lactea</i> \times <i>Riviniana</i> - - - - -	93
<i>V. stagnina</i> and forma <i>humilis</i> - - - - -	97
<i>V. montana</i> (upper leaf) - - - - -	100

SECTIO NOMINIUM GINGINS

©) ACAULES Linn.

! *Hypocarpea* Godron.

* FLAGELLATAE Kittel.

	PAGE
V. odorata Linn. - - - - -	1—17
var. <i>praecox</i> , var. nov. - - - - -	2
var. <i>dumetorum</i> (=V. <i>dumetorum</i> Jord.) -	5
var. <i>subcarnea</i> (=V. <i>subcarnea</i> Jord.) -	5
var. <i>floribunda</i> (=V. <i>floribunda</i> Jord.) -	6
var. <i>sulfurea</i> (=V. <i>sulfurea</i> Cariot) - -	6
forma <i>imberbis</i> (=V. <i>imberbis</i> Leighton) -	7
forma <i>inodora</i> (=var. <i>inodora</i> Cambess.) -	8
V. <i>hirta</i> × < <i>odorata</i> (× <i>superodorata</i> , hybr. nov.) - - - - -	9
V. <i>hirta</i> × < <i>odorata</i> (=V. <i>sepincola</i> Jord.) -	11
V. <i>hirta</i> > × <i>odorata</i> (=V. <i>permixta</i> Jord.) -	13
V. <i>hirta</i> × < <i>odorata</i> (=V. <i>multicaulis</i> Jord.) -	16
V. <i>hirta</i> > × <i>odorata</i> (=V. <i>collina</i> Besser) -	17

* EFLAGELLATAE Kittel.

V. hirta Linn. - - - - -	20—26
var. <i>oenochroa</i> Gillot et Ozan - - - - -	22
var. <i>pinetorum</i> (=f. <i>pinetorum</i> Wiesbaur) -	22
var. <i>propera</i> Jordan - - - - -	22
var. <i>Foudrasi</i> (=V. <i>Foudrasi</i> Jord.) - -	22
var. <i>inconcinna</i> J. Briquet - - - - -	23
var. <i>hirsuta</i> Lange - - - - -	23
var. <i>variegata</i> , var. nov. - - - - -	24
var. <i>lactiflora</i> Reichenbach - - - - -	24
var. <i>glabrata</i> Beeby - - - - -	25

BRITISH VIOLETS

	PAGE
forma <i>imberbis</i> , f. nov. - - - -	25
forma <i>rosea</i> Beeby - - - -	26
forma <i>revoluta</i> Heuffel - - - -	26
V. calcarea Gregory - - - -	26—29
†† <i>Plagiostigma</i> Godron.	
V. palustris Linn. - - - -	29—30
forma <i>alba</i> - - - -	30
forma <i>major</i> - - - -	30
<i>V. epipsila</i> × <i>palustris</i> Ruprecht - - -	30
V. epipsila Ledebour - - - -	31—37
forma <i>glabrescens</i> - - - -	34
forma <i>minor</i> - - - -	34
(—) CAULESCENTES Linn.	
⊕ ROSULANTES Borbás.	
V. silvestris Lamarck - - - -	37—46
var. <i>punctata</i> Druce - - - -	39
forma <i>pallida</i> Neuman - - - -	45
forma <i>rosea</i> Neuman - - - -	45
forma <i>leucantha</i> Beck - - - -	45
<i>V. Riviniana</i> × var. <i>punctata</i> - - -	46
V. Riviniana Reichenbach - - - -	46—69
var. <i>diversa</i> Gregory, var. nov. - - -	49
var. <i>pseudo-mirabilis</i> (= <i>V. mirabilis</i> Coste)	53
forma <i>nemorosa</i> (= var. <i>intermedia</i> Le	
Grand) - - - -	56
forma <i>villosa</i> Neuman - - - -	58
forma <i>luxurians</i> Becker - - - -	62
forma <i>minor</i> Murbeck - - - -	63
<i>V. canina</i> × <i>silvatica</i> (agg.) ¹ - - -	66

¹ *V. silvatica* (agg.) includes *V. silvestris* Lam. and *V. Riviniana* Reichb.

SECTIO NOMINIUM GINGINS

	PAGE
<i>V. canina</i> × <i>Riviniana</i> - - - - -	67
<i>V. rupestris</i> Schmidt - - - - -	69—74
var. <i>arenaria</i> - - - - -	71
var. <i>glabrescens</i> - - - - -	74
var. <i>glaberrima</i> - - - - -	74
⊖ ⊖ AROSULATAE Borbás.	
<i>V. canina</i> Linn. - - - - -	74—89
var. <i>ericetorum</i> (= <i>flavicornis</i> Smith) - - - - -	76
forma <i>alba</i> - - - - -	77
var. <i>calcareae</i> - - - - -	77
var. <i>pusilla</i> Babington - - - - -	78
var. <i>sabulosa</i> - - - - -	79
var. <i>lanceolata</i> - - - - -	80
var. <i>crassifolia</i> Grönvall - - - - -	83
var. <i>lucorum</i> Reichb. - - - - -	86
<i>V. canina</i> > × <i>stagnina</i> - - - - -	88
<i>V. canina</i> × < <i>stagnina</i> - - - - -	89
<i>V. canina</i> × <i>montana</i> - - - - -	89
<i>V. lactea</i> Smith - - - - -	90—96
<i>V. canina</i> × <i>lactea</i> (= var. <i>intermedia</i> Watson) - - - - -	92—95
<i>V. canina</i> , var. <i>ericetorum</i> × <i>lactea</i> (var. <i>pumili-</i> <i>iformis</i> Rouy et Foucaud) - - - - -	95
<i>V. canina</i> × <i>V. lactea</i> × <i>V. Riviniana</i> - - - - -	95 and 96
<i>V. lactea</i> × <i>V. Riviniana</i> - - - - -	95
<i>V. stagnina</i> Kitaibel - - - - -	96—99
forma <i>umbrosa</i> - - - - -	99
forma <i>humilis</i> - - - - -	99
<i>V. montana</i> > × <i>stagnina</i> - - - - -	99
<i>V. montana</i> Linn. - - - - -	100—103

BRITISH VIOLETS

Viola odorata Linn.

Sweet Violet.

V. ODORATA. L., Species Plantarum 934 (1753); Reichenbach, Fl. Germ. Excurs. 705 (1832); Ic. Fl. Germ. et Helv. iii. f. 4498 (1839); Syme, Eng. Bot., ii. 14 (1864); Nyman, Conspectus Fl. Europ. 78 (1878); Koch, Syn. Deutsch. u. Schweizer Fl. ed. 3, i. 171 (1890); Rouy et Foucaud, Fl. de Fr. iii. 24 (1896); Neuman, Sveriges Fl. Ex. i. (1901); Bab., Man. ed. 9. 43 (1904); Becker, Violenstudien 3 (1910).

HABIT:—underground stem thick, scaly, emitting rooting stolons. No flowers produced during the first year of the plant's development from seed.

STIPULES:—broad, lanceolate, glandular-ciliate, short pointed, lower 9-17 mm. by 2-5 mm. at broadest part.

LEAVES:—(Spring), shining, reniform-cordate, about as broad as long (15-30 mm.), smooth, or slightly hairy. (Summer), lamina and petioles, slightly hairy, with *depressed* hairs, lamina 4-6 cm. long, somewhat longer than broad, with an open sinus. Few leaves (or none) remaining till the following spring.

FLOWERS:—dark bluish purple ('violet'), fragrant; *peduncles* glabrous, or thinly pubescent, with *depressed* hairs; *bracts* generally above the middle of the peduncle; *sepals* oval, blunt; *petals* ovate, deep violet on the inside, with a blue-white base, dark blue on the outside, with a deep 'violet' spur; the green summer flowers (cleistogamous

BRITISH VIOLETS

flowers) set seed freely, but the production of seed is not limited to them, as was formerly supposed, the open spring flowers having been proved to bear fertile seed in great plenty¹; *capsule* roundish, bluntly trigonous, pubescent, often suffused with purple.

P. II.—IV.

Hedge-rows, borders of fields, frequent. Less abundant in the south-west of England than var. *dumetorum*.

var. *praecox* var. nov.

Early Violet.

A *Viola odorata* differt quippe quæ pusilla sit et fere totum per annum flores exhibeat. Sepalas habet acutiores, petalas superiores parvas angustas, recurvas, frondes æstivatas ad apicem acutiores, ad basim obliquiores.

A plant, differing from the type *V. odorata* in its smaller and darker, though equally fragrant flowers, in its more slender stolons and somewhat smaller spring leaves, has been noticed by me for many years. A very careful study of the plant in all its stages induces me to believe it to be quite worthy of varietal rank, and I propose to add it to our flora under the name of *V. odorata* var. *praecox*.

In the neighbourhood of old gardens it is occasionally found as an escape, but the remoteness from cultivation of some of its habitats precludes me from regarding it as invariably a garden escape.

The var. *praecox* further differs from *V. odorata* (type) in the following particulars:—in having a dwarf habit; in flowering much longer (it is in bloom in Devon and Somerset from October to March); and in having much smaller blackish-purple flowers. As the season advances the flowers tend to become larger, though they never attain to the size of the April-flowering vars. *violacea*, *dumetorum*, and sub-

¹ Gregory in Journ. Bot., xlv. 155 (1907).



1. SUMMER LEAVES OF *V. ODORATA*, L. VAR. *PRAECOX*.
2. SUMMER LEAVES OF *V. ODORATA*.

(No. 1156, 1 and 2, Herb. Gregory.)

BRITISH VIOLETS

carnea of our Western hedge-rows. Other differences are that the sepals are more pointed; the upper petals are small, narrow and recurved, the lateral petals small, with a distinct downward droop.

One other character certainly deserves notice. The late leaves of var. *praecox* are more pointed at the apex and generally show considerably more obliquity at the base than those of ordinary *V. odorata*.

A character which this plant shares with *Viola alba* Besser is that flowers are often to be found on the stolons, in the first year of their development; as the same thing occasionally occurs also in *V. odorata*, I have made no point of the fact in my description.¹

Through the kind help of Mr. Allard (formerly of the Botanic Gardens, Cambridge) I have been able to study seedlings of this violet. Seeds were sown under a frame during the autumn of 1908, along with seeds of *V. odorata* var. *sub-carnea*, which were subjected to precisely similar conditions. The seeds of the early flowering violet germinated more slowly and the seedlings remained less forward in development during the entire season. On Nov. 9, 1909, there was a marked contrast between the two; seedlings of var. *sub-carnea* having developed into large vigorous plants, leaving the var. *praecox* still diminutive though equally healthy. Neither of the two bore flowers during their first season.²

P. IX.—III.

Devon:—Near St. Mary Church; Miss Peck, Miss Larter, and Miss Diana Warry.

¹ Rouy et Foucaud (l.c. 24) write of *V. odorata* L. "Souche épaisse émettant des stolons souterrains allongés ou des tiges latérales ne portant des fleurs que l'année suivante de leur développement."

² Seedlings of *V. montana* L. (= *V. nemoralis* Kützing) raised at the same time, in the same way, bore flowers and fruit.

VIOLA ODORATA

Somerset:—Weston Wood: one patch on ground recently added to the garden of Fairleigh School; E. S. Gregory.

Wilts.:—Hedge-bank between Trowbridge and Semington.

var. *dumetorum*.

V. odorata L. var. *alba*, auct. plur. non Besser.

V. dumetorum Jord., Pug. Pl. Nov., 16 (1849).

V. odorata, var. *dumetorum*, Rouy et Foucaud, Fl. de Fr., iii. 25 (1896).

V. odorata, f. *albiflora*, Neuman, Sveriges Fl. 268 (1901).

Peduncles slightly hairy, flowers very fragrant; *sepals* oblong, blunt, with hyaline margins; *petals* white, or white tinged with purple; *spur* of a pale violet colour; *anther spur* curved and recurved; *capsules* pubescent, with short hairs.

P. III.—IV.

Apparently more common than the type and very abundant on hedge-banks in the West of England.

To avoid confusion between this variety and the species, *V. alba* Besser, we propose to adhere to the varietal name *dumetorum*, Rouy and Foucaud.

var. *subcarnea*.

V. subcarnea Jord., Pug. Pl. Nov., 17 (1852).

V. odorata, var. *subcarnea*, Parlatores, Fl. Ital., ix. 130 (1890).

Peduncles glabrous, or glabrescent; *flowers* very fragrant; *petals* flesh-coloured, reddish-purple or lilac, lower petal emarginate (this character is sometimes present in var. *dumetorum*); *capsules* obtusely angular, puberulent.

P. III.—IV.

Plentiful, with the type and var. *dumetorum*.

BRITISH VIOLETS

var. *floribunda*.

V. floribunda, Jord., Pug. Pl. Nov. 19 (1852).

V. odorata, var. *floribunda*, Rouy et Foucaud, Fl. de Fr. iii. 25 (1896).

STOLONS:—short, robust, scarcely rooting.

STIPULES:—ovate-lanceolate, long and very broad at base.

LEAVES:—(Spring), of a bright green colour, similar in shape to those of *V. odorata* but larger. (Summer), enlarging considerably; *petioles* slightly hairy with depressed hairs.

FLOWERS:—numerous, large, of a thick texture, scarcely scented; *sepals* oblong obtuse; *petals* of a fine violet colour, the superior broadly elliptic-oval; *bracts* below the middle of the peduncle; *spur* longer than appendages of sepals, channelled above, bluntly hooked; *anther-spurs* lancet-shaped, decurved, blunt; *capsule* globose, shortly pubescent.

Much larger in all its parts than any other British violet.

Kent:—Recorded for two localities only. First record: Miss C. E. Pye, April, 1904; Wood near Cobham.

var. *sulfurea*. Mr. Bickham's Yellow Violet.

V. sulfurea, Cariot, Études des Fleurs, ed. 3, ii. 63 (1860); 7, ii. 81 (1884).

V. odorata var. *sulfurea*, Rouy et Foucaud, Fl. de Fr. iii. 26 (1896).

STOLONS:—long, stout, smooth, rooting at intervals.

STIPULES:—13 by 5 mm., tapering to a long point, membranous, tinged with purple in patches, ciliated with glandular hairs from base to apex.

LEAVES:—(Spring), somewhat lengthened, though not pointed, with short scattered hairs above, from a tubercular base; hairy below, especially on the veins; *petioles* thickly hairy with deflexed hairs.

VIOLA ODORATA

FLOWERS:—apricot-coloured for one to two-thirds of their length, faint yellow beyond, the petals tinged with purple in patches, and having a dark purple spur; *peduncles* with scanty deflexed hairs; *bracts* for the most part above the middle of the flower-stem, about 5 mm. long, ciliated and acuminate; *sepals* oblong, rounded at apex, with a narrow membranous border; *petals* broad, roundish, of thickened texture, lateral petals very slightly bearded; *spur* blunt; *anther-spurs* thick, curved, scarcely longer than the anther with its apical scale; *capsule* roundish, pubescent.

P. III.—IV.

Affinity with *V. odorata*, though lacking fragrance.

Hereford:—Shrubbery (not planted), Ross, V. C. 36.

With the above variety may be included a slightly different form, which, although growing in a shrubbery, was not planted there. It differed from Mr. Bickham's violet by having *hairy* peduncles, *bracts* broadly ovate-ciliate; *petals* sulphur coloured for two-thirds of their length, yellowish-white beyond; *capsules* densely pubescent.

Somerset, N.:—In a shrubbery (formerly part of the Weston Woods), now included in the grounds of The Lodge, Weston-s.-Mare.

forma imberbis.

V. imberbis, Leighton in Loudon's Mag. Nat. Hist. viii. 277 (1835).

V. odorata, var. *imberbis*, Henslow, Cat. Brit. Pl. ed. 2, 9 (1835).

V. suavis, Lindley, Syn. ed. 2, 320 (1835) (not of Bieberstein).

Lateral petals lacking the usual tuft of hairs. Colour of flowers frequently a pale lilac or whitish with dark veins. Mr. Hunnybun and I have noticed a more rounded appearance of the flower in this form.

BRITISH VIOLETS

Cultivated by the Rev. W. A. Leighton for 9 years without change at Sharpstones, Salop. Mr. Leighton's type was white, but blue flowered forms are often found.

Somerset, N.:—Near Weston-s.-Mare, E. S. G.

Berks.:—Mr. Druce.

Oxon.:—Mr. Druce.

Bucks.:—Mr. Druce.

Northants.:—Mr. Druce.

Glo'ster.:—Mr. Druce.

P. III.—IV.

Probably frequent; certainly so in Somerset.

forma inodora.

V. odorata, var. *inodora* Cambessides, Enum. Plant. Insulis Balearibus, 46 (1827).

Already the season 1912 gives promise of an even greater state of flux among the violets than has occurred heretofore. Two violets have been sent me which are *V. odorata* in every character save scent; from this they are absolutely free.¹

One of the two (found near Westward Ho, Devon, by Lady Davy, and sent me by Mr. Druce) had flowers lilac, or whitish with purple veins; the other came through Miss Livett, from Miss Goodwin, of Canon Court, Watlington, the petals of which were perfectly pure white with a greenish spur.

A reference is made (in Journ. Bot., xxx. 67 (1892)) to a Surrey plant gathered by the Rev. E. S. Marshall and reported by Prof. Wiesbaur to be apparently his *Viola tenerrima*. In reference to this plant, Rev. E. S. Marshall has kindly supplied me with the following note:—My sheet

¹ These plants had already been included in my list as form. nov. *inodora*, when I discovered that Cambessides had anticipated me.

HYBRIDS OF VIOLA ODORATA

of *Viola tenerrima* (Ref. No. 667) was gathered in a shady wood above Godalming Station, Surrey, on May 31, 1889; I have noted it as "abundant and native." It grew on the lower greensand; and I believe that Mr. Beeby found it in other Surrey localities. Of course it was in *fruit* only. Leaves very thin, up to 3 inches long, at this stage. It looked like a shade-form, and may be no more than that. Wiesbaur's comment, sent to Mr. Beeby, was:—"V. *tenerrima* Wiesbaur esse videtur ob folia magis rotunda et tenera (*ad* V. *odorata* L.)."

HYBRIDS OF V. ODORATA.

Intermediates (hybrids or mutations?) between V. *odorata* L. and V. *hirta* L. are common in the S.W. of England. In his Sveriges Flora, Neuman gives—in addition to the acknowledged hybrids, *sepincola* and *permixta*—the forms *sub-odorata* and *sub-hirta*. That there exist in this country intermediate forms not easily referable to *sepincola* or *permixta* must be granted.

V. *hirta* × < *odorata* (× V. *superodorata* hybr. nov.)

A violet very near to V. *odorata* L. was noticed by me in Banwell Wood, Somerset, March 1905. The flowers—of a rich red-purple—were very large and deliciously fragrant. A full description follows:—Stoloniferous, stolons rooting, long, numerous, and very slender; *spring leaves* small; *summer leaves* with elongated petioles, the blades roundish and blunt at the apex, overlapping at base; *petals* roundish and broad; *bracts* always below the middle of the peduncle; *capsules* densely pubescent, much more so than those of V. *odorata* or V. *hirta*.

V. *hirta* (type) and V. *odorata* var. *subcarnea* were growing in abundance near by, from which fact I received the impression (strengthened by subsequent examination) that the plant is an intermediate between V. *hirta* and V. *odorata* var.



V. ODORATA \times HIRTA (= V. SEPINCOLA, JORD.) (showing sub-acute apex of summer leaves).

(Nos. 612 and 1074 Herb. Gregory.)

HYBRIDS OF VIOLA ODORATA

subcarnea, approaching nearer to *V. odorata* than \times *sepincola* does. The name (*sepincola*) was suggested for it by Dr. Neuman. Dr. Becker sees nothing more than *V. odorata* in the plant. These gentlemen were at the disadvantage of seeing dried examples only.

V. hirta \times *odorata* (\times *V. sepincola*).

V. sepincola Jordan Obs. Pl. Crit. vii. 8 (1849); Nyman, Conspectus Fl. Europ. 78 (1878).

V. permixta Jord., var. *sepincola* Rouy et Fouc., Fl. de Fr. iii. 32 (1896).

GENERAL DESCRIPTION:—

Near *V. odorata* L., with more numerous, longer, sometimes rooting, stolons (Koch says:—"Äüsläufer Kurz." Neuman, on the contrary:—"Utlöpare långa.") Underground stems somewhat slender, yellowish-white, scaly, as if carved and polished in old ivory; *spring leaves* longer than broad, pointed and somewhat hairy; *summer leaves* long and broad (6-10 \times 4-8 cm.); *stipules* lanceolate-subulate, fringed; fringe sometimes shorter, often longer than the stipules' breadth; *flowers* large, dark reddish or rich violet colour, faintly scented; *bracts* below or at about the middle of the peduncle; *capsule* roundish, bluntly angled, suffused with purple, pubescent; fruit stalks prostrate.

P. III.—V.

S. Devon:—(flowers white), St. Mary Church; Miss C. L. Peck.

Somerset:—Wington; Weston Woods; E. S. G. Murdercombe, near Elm; Mr. J. W. White (flowers white).

Oxford:—Woodstock; Mr. Druce.

Affinity with *V. odorata* L. as regards stolons and slight fragrance; with *V. hirta* L. as regards leafage.

BRITISH VIOLETS

SPECIAL PLANT DESCRIBED WHEN FRESH:—

(No. 1529 Herb. Gregory.)

HABIT:—laxly stoloniferous with numerous long slender branches.

STIPULES:—pale, almost transparent, 1-2 cm. in length, 1-5 mm. in breadth at base, gradually tapering to an extremely fine point, bordered by long gland-tipped processes which are *again fringed* (as well as the margins of stipules) with short simple hairs.



x 3

LEAVES:—bright green, long petioled, petioles glabrescent.

FLOWERS:—white, lateral petals scarcely bearded; *peduncles* long (9½ cm.); *bracts* variously disposed, some high, some low; *sepals* long, broad, re-curved, ciliate.

Devon, S.:—St. Mary Church; Miss C. L. Peck. No. 1529, Herb. Gregory.

The reputed hybrid *sepincola* appears to be a much rarer plant than \times *permixta*; it has flowers of a darker colour, slightly scented.

Jordan (l. c.) says of his *sepincola*:—"Elle diffère du *V. odorata* L. par l'odeur des fleurs très légère, ou presque nulle." Previous to reading Jordan's description the attribute of slight fragrance puzzled me in a violet found at Wrington, Somerset. I transferred plants of this to my garden for purposes of study. Its rampant growth and large dark flowers had attracted my attention in the hedge-row; on examination it was easy to determine—by the shape of the leaves and the bracts always below the middle of the peduncle—that the plant held an intermediate place between *V. odorata* and *V. hirta*. Later examination confirmed this opinion.

HYBRIDS OF VIOLA ODORATA

The summer leaves were immense, longer and more pointed than are ever those of *V. odorata* L., approaching—in this character—nearer to *V. hirta* L. than does $\times permixta$, whose late leaves are shorter and broader.

Jordan tells us (Obs. Pl. Crit. vii. 9) that *V. sepincola* Jord. differs from *V. odorata* L. by having “stipules bien plus étroites.” They are certainly much longer and tend to run out gradually to a fine point. Also, Jordan has under *V. sepincola*:—“Sa corolle d’un violet bleuâtre à gorge blanche.” Colour differences are not of supreme importance, and as far as our British plants are concerned, I venture to reverse the two colour-descriptions, taking as precedents the views expressed by Kerner (Kerner and Oliver, Nat. Hist. of Plants, p. 395):—“beautiful scented blossoms of a violet colour,” and by Messrs. Groves (Bab., Man. ed. 9, 44):—“much darker flowers” (than *permixta*, a description of which precedes this statement).

In my experience the more important characters attaching to $\times sepincola$, such as longer rooting stolons and slightly fragrant flowers (marking a near approach to *V. odorata*), are accompanied by a dark flower quite unlike the slaty-blue (mauve) blossoms of $\times permixta$.

V. hirta \times *odorata* ($\times permixta$).

V. permixta Jord. Obs. Pl. Crit. vii. 6 (1849).

V. hirta sub-species *V. permixta*, Nyman, Conspectus Fl. Europ. 78 (1878).

Whilst *V. sepincola* Jord. approaches closely to *V. odorata* L., *V. permixta* Jord. in many respects comes very near to *V. hirta* L. Indeed, but for its short thick stolons, scarcely or seldom rooting, and its shorter broader less pointed summer leaves, it might almost be taken for a glorified *V. hirta*.

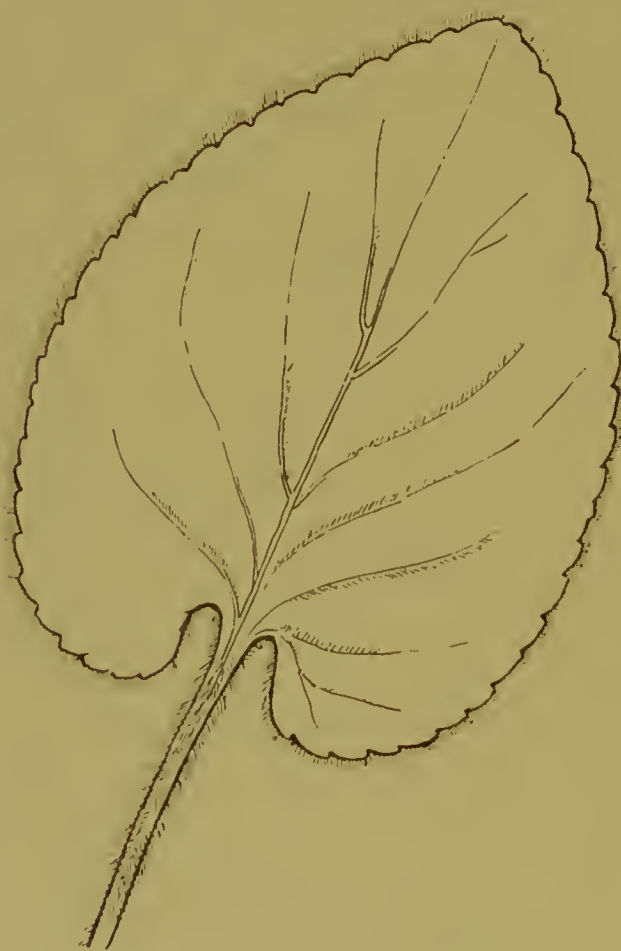
The colour of the flowers in our British plants is of a bluish mauve, with white eye, unlike the darker richer hue of

BRITISH VIOLETS

those of *×sepincola*. A white flowered form is pretty often found.

GENERAL DESCRIPTION:—

Near *V. hirta* L. but with short thick scarcely rooting stolons; underground stems thick, rough, of a brownish colour; *spring-leaves* shorter in proportion, and broader than those of *V. hirta*; *summer leaves* enlarging in length and breadth but remaining obtuse at the apex: *stipules* (1.2 cm. \times 2.5 mm.),



V. odorata \times *<hirta* (= *V. permixta*, Jord.) (to show rounded apex of summer leaves).

linear-lanceolate, acuminate, fringed; fringe shorter than half the breadth of the stipule; *flowers* of a bluish mauve colour,

HYBRIDS OF VIOLA ODORATA

scentless; *bracts* at about the middle of the peduncle; *capsules* roundish, pubescent.

P. III.—V. and again in Autumn.

Devon:—Torquay and St. Mary Church; Misses Peck and Larter.

Somerset, N.:—Weston-s.-Mare; Winscombe; Christon; E. S. G.

Gloucester, W.:—Almondsbury; Mr. White.

Kent:—Higham; Miss C. E. Palmer in Herb. Druce.

Berks.:—Basildon, etc.; Mr. Druce.

Oxford:—Goring; Woodstock; Mr. Druce.

Northants.:—Courteenhall; Mr. Druce.

Affinity with *V. hirta* L. as regards shorter stolons (than \times *sepincola*) and unscented flowers; with *V. odorata* L. in shape of leaves.

SPECIAL PLANT DESCRIBED WHEN FRESH:—

(No. 1530, Herb. Gregory.)

HABIT:—tufted, with short thick stolons.

STIPULES:—(9-20 \times 2-5 mm.), falcate, broader above the base than No. 1529, almost suddenly contracted at the apex to an awl-shaped point with gland-tipped processes; margin of the stipule fringed with short cilia.



$\times 3$

FLOWERS:—a lovely bluish-mauve with clear white eye (probably the cross *dumetorum* \times *hirta*); *peduncles* hairy; *sepals* oblong, margined with white, ciliate at base; *petals* all emarginate; *spur* faintly channelled.

Devon, S.:—St. Mary Church; Miss C. L. Peck. No. 1530 Herb. Gregory.

BRITISH VIOLETS

With regard to the form *permixta*, Mr. White writes (Flora of Bristol, 173 (1912)): "A most peculiar fact concerning the plant (*V. odorata* \times *hirta* f. *permixta*) in cultivation has been communicated to me by both Mrs. Gregory and Mr. Fry. In their gardens, clumps which in April had produced a fine show of typically coloured bloom, had a second flowering in autumn. The later flowers in Mrs. Gregory's case were *white* and fragrant; with Mr. Fry they were also white, but scentless! There is no doubt as to this experience, for the particular plants had been carefully watched." To Mr. White's note I may add that as the years sped the whole clump in my garden became white-flowered, the flowers highly scented, and the habit of the plants stoloniferous.

Viola hirta \times *odorata* (\times *multicaulis*).

V. multicaulis Jordan, Pugill. Pl. Nov. 15 (1852).

V. pluricaulis Borbás in Koch, Syn. Deutsch. u. Schweizer Fl. ed. 3, i. 179 (1890).

V. multicaulis (Jord.), Rouy et Fouc., Fl. de Fr., iii. 33 (1896).

I propose to preface a description of this plant with a quotation from a paper by the late Mr. W. H. Beeby, who remarks (Journ. Bot., xxx. 67 (1892)) :—" *V. odorata* is a very variable species with us; some of its forms are only doubtfully separable from *V. multicaulis* Jord. Whether the latter is really distinct or not, seems to me very uncertain."

This is precisely my own mental attitude towards the variety in question, but I am convinced that if there be such a thing as *V. multicaulis* Jord., we have it in specimens sent to me by Miss C. L. Peck, from S. Devon, and in Mr. Druce's collection from Brize Norton, Oxon. In the Babington Herbarium at Cambridge there are also examples referable to this plant, and in the Watson herbarium at Kew there is an example from S. Devon.

The distinguishing feature of this plant, and that which separates it from \times *sepincola* and \times *permixta*, is the existence

HYBRIDS OF VIOLA ODORATA

of long slender smooth above-ground branches, rooting freely at the nodes.

Rouy et Foucaud make *V. multicaulis* Jord. a hybrid,—*V. alba*¹ × *odorata* (Fl. de Fr., iii. 34).

Viola hirta > × *odorata* (× *collina*).

V. collina Besser, Enum. Pl. Volh. 10 (1822); Nyman, Conspectus Fl. Europ., 78 (1878).

Besser's description follows:—"Stolonibus nullis sub hirsuta, foliis cordatis, calycibus obtusis, floribus odoratis. Planta parva flores pallidi lilacina. Aprili florens in collibus nonnullis Cremenci ubi eam anno elapso legit. Affinis *V. campestris* a qua forma foliorum hirsuti (illius folia pubescentia) et colore florum praeprimis diversa."

Grenier et Godron (Fl. de Fr., i. 178, 1848):—"Stipules étroitement lanceolées cuspidées fimbriées *pubescentes ainsi que les dentelures* dont la longueur égale le diamètre de stipule."

Boreau writes (Fl. du Centre de la France, ii. 73, 1857):—"Stipules lanceolées cuspidées fimbriées, hispides sur les bords à fimbriures intermédiaires aussi longues que le diamètre transversal de la stipule."

Willkomm and Lange again write (Prod. Fl. Hisp., iii. 696, (1880)):—"Stipulis anguste lanceolatis, longe cuspidatis, pellucide membranaceis, fimbriato-ciliatis, ciliis diametrum ipsius stipulae subequantibus."

Borbás says (in Koch, Syn. Deutsch. Fl., ed. 3, i. 166 (1890)):—"Die mittleren Fransen von der Länge des Querdurchmessers des Neben B. diese samt den Fransen gewimpert."

Rouy et Foucaud have (Fl. de Fr., iii. 23, (1896)):—"Stipules subhispides étroitement lanceolées-acuminées,

¹ Undoubtedly referring to *V. alba* Besser.

BRITISH VIOLETS

ciliées-glanduleuses, à cils pubescents égalant presque la largeur de la stipule."

Neuman writes (Sveriges Flora 263 (1901)):*—*Stipler lansettlika långspetsade finhåriga, i kanten hår- och glandelbräddade, tätt tandade; tänder 1-3 mm. långa."

In a splendid collection of dried violets received October, 1911, from Mr. Hiern, I detected examples of a new British intermediate (or hybrid) between *Viola hirta* and *Viola odorata*, differing from both in the shape of the leaves and in the excessive hairiness of surface (the term *grisâtre* applied to *V. collina* by various French writers is eminently applicable to these plants). There were specimens from three localities—Boxhill, Surrey; Woolacombe and Branton Burrows, N. Devon.

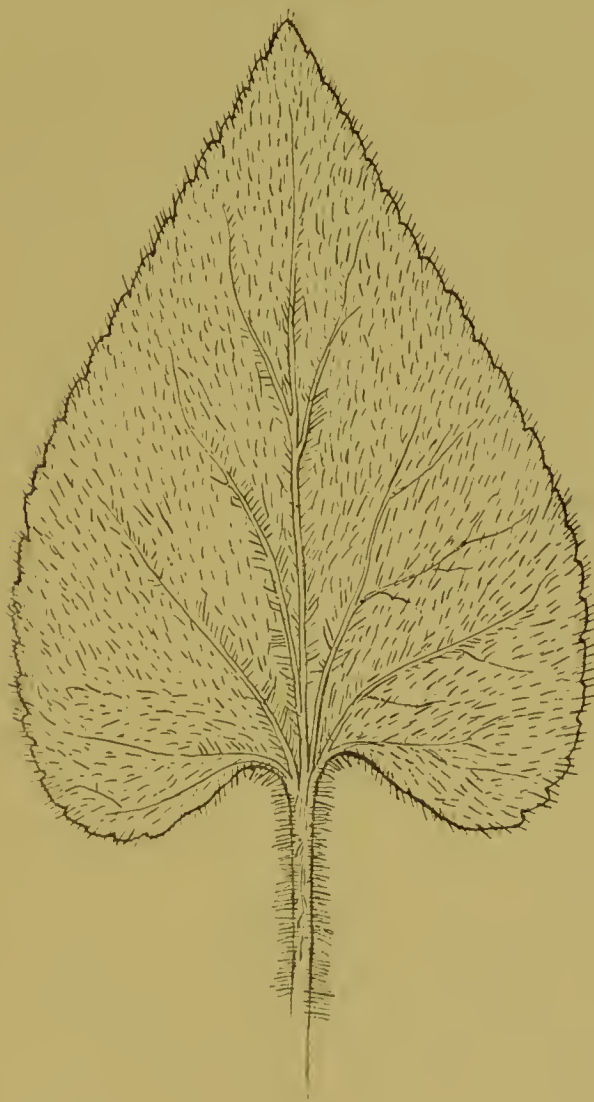
On reading up Besser's description of *Viola collina*, I perceived that it covered Mr. Hiern's plants. I have seen no authentic specimens of Besser's type, and Mr. Hiern's plants do not altogether agree with examples of *V. collina* in Herb. Mus. Brit., put up by various Continental collectors. They do, however, agree well with examples in Herb. Cantab., where I found a fuller range of specimens than at S. Kensington. Some of these were gathered on sand dunes, as were those in Mr. Hiern's collection from Branton Burrows and Woolacombe, N. Devon. (E. Perrier has:—" *V. collina* Besser; Pâturages Sablonneux.")

Great stress is laid on the stipules of *V. collina* Besser by later authors, on which character Besser himself is silent. Stipules answering exactly to the foregoing descriptions are to be found in *Viola hirta* \times *odorata* f. *sepincola* and allied forms; typical *permixta* and its forms often lack the secondary fringe of cilia. Reference to the descriptions of two violets (Nos. 1529 and 1530, see pp. 12 and 15), sent to the author by Miss C. L. Peck, from St. Mary Church, S. Devon, April 1911, and described whilst fresh, may serve to confirm the truth of this statement.



HYBRIDS OF VIOLA ODORATA

Apart from its characteristic stipules, *V. collina* Besser shows its claim to be classed as an intermediate between *V. odorata* and *V. hirta*, approaching the one in the matter of fragrance (an attribute as yet, I believe, undetected in our British representatives) and surface with *depressed* hairs; the other, in its cæspitose habit and almost shaggy surface.



V. hirta > \times *odorata* (= *V. collina*, Besser).
(No. 1655 Herb. Gregory.)

BRITISH VIOLETS

As I have already indicated, whole strings of intermediates exist between allied species of Violets, and it is a matter for consideration if we award (or keep to) special names for those intermediates possessing marked characters. I incline to approve this method, which is exemplified by giving the names *sepincola* and *permixta* to certain forms of *V. hirta* × *odorata*.

Viola hirta Linn.

Hairy Violet.

V. HIRTA. L., Species Plantarum 934 (1753); Reichenbach, Fl. Germ. Excurs. 705 (1832); Syme, Eng. Bot., ii. 17, t. 172 (1864); Nyman, Conspectus Fl. Europ., 78 (1878); Hartman, Skand. Fl. ed. 11, 223 (1879); Koch, Syn. Deutsch. u. Schweizer Fl., ed. 3, i. 188 (1890); Rouy et Foucaud, Fl. Fr. iii. 20 (1896); Neuman, Sveriges Fl. Ex. 3 (1901); Bab., Man. ed. 9, 44 (1904); Becker, Violienstudien, 31 (1910).

HABIT:—caespitose; stem lacking stolons.

STIPULES:—lanceolate-acuminate, glabrous, bordered with teeth shorter than the stipule's breadth.

LEAVES:—(Spring), the first triangular-cordate, the succeeding oval or oval-oblong, cordate, hairy on both surfaces, especially the lower; margin crenulate; petioles with *spreading* hairs. (Summer), elongating (7-11 by 4-7 cm.) on petioles 2-3 times longer than the blades, furnished with thick *spreading* hairs.

FLOWERS:—not scented, bluish-violet (mauve) or rose-coloured with whitish base (seldom wholly white); the lateral petals usually bearded; *sepals* oval, obtuse, ciliate; *spur* comparatively long and hooked; *peduncles* with the bracts generally (though not invariably) *below* the middle; *capsules* roundish, mottled with purple, downy; fruiting peduncles prostrate.



V. HIRTA, L. (late leaf).

(No. 1518 Herb. Gregory.)

BRITISH VIOLETS

var. *oenochroa*.

V. hirta, var. *oenochroa*, Gillot et Ozan in Bull. Soc. Dauph., xi. 461. Exsicc. Soc. Dauph., No. 4044.

A small undeveloped-looking plant having small mauve or lilac coloured flowers with narrow petals and a white eye.

Somerset:—Banwell; E. S. G. Wychwood, Oxon.; Mr. Druce.

var. *pinetorum*.

V. hirta, forma *pinetorum*, Wiesb. ex Dichtl in Deutsch. Bot. Monatsschr. iii. 45 (1885).

Summer leaves much exceeding the flowers: "Stipules 2-4 cm." Neum. Flowers reddish.

Somerset:—E. S. G. Wychwood, Oxon.; Mr. Druce.

var. *propera*.

V. hirta, var. *propera*, Jord., Obs. Pl. Crit. vii. 6 (1849); Gillot in Mém. Soc. Sci. Saône-et-Loire ii. 6 (1882); Exsicc. Soc. Dauph., No. 4047.

Small leaves, rather large flowers with broad sepals.

Oxford:—North Leigh, Kiddington and Goring; Mr. Druce.

Cambridge:—Fleam Dyke; Mr. Wilmott.

As exhibited by Schultz this is not unlike my *Viola calcarea*. Jordan suggests that the plant is an intermediate between *V. hirta* and its var. *Foudrasi*.

var. *Foudrasi*.

V. Foudrasi. Jord., Obs. Pl. Crit. vii. 4 (1849).

V. hirta, var. *Foudrasi*. Rouy et Foucaud, Fl. de Fr. iii. 21 (1896).

A small glabrescent plant, flowers small, often lilac-coloured, tinged with blue or red; *spur* hooked.

This is the plant which in Babington's herbarium—as well

VIOLA HIRTA

as in our public herbaria—is constantly mixed up with *V. calcarea* (Bab.) Greg. From this it is distinguished by its more elegant habit, its flowers on longer peduncles, and chiefly by its longer *hooked* spur.

P. IV.—V. and again in autumn.

It is in flower with *V. hirta* at least a fortnight before *Viola calcarea* Greg.

A white flowered form of this var. with greenish spur has been found at Clevedon by Miss Livett (Journ. Bot. 1910); near Torquay by Miss Peck, and at Kiddington, Oxon., by Mr. Druce; also between Rievaulx and Hawnby, Yorks.; Mr. T. G. Foggitt.

It agrees with a specimen in Herb. Mus. Brit. labelled "*V. hirta* L., *albiflora*, var. *minuta*, Dr. Schur."

var. *inconcinna*.

V. hirta, var. *inconcinna*. J. Briq. in Bull. Soc. Bot. Genève vii. 77 (1894).

Flowers small, numerous; plant growing from woody underground branches which cross and recross one another.

Somerset:—Worle Hill, Weston-s.-Mare; Christon; E. S. G. Oxford:—Wychwood; Mr. Druce.

Cambridge:—Fleam Dyke; Mr. Wilmott.

var. *hirsuta*.

V. hirta, var. *hirsuta*, Lange in Willkomm et Lange Prodr. Hisp. iii. 696 (1880).

V. hirsuta, auct. non Schultes in Roemer et Schultes, Syst. Veg. v. 361 (1819).

Described by Rouy et Foucaud, Fl. de Fr. iii. 21. "Fleurs presque 1 fois plus grandes que dans a.; pédoncules florifères allongés (8-12 cm.); feuilles plus hérissées, presque velues."

BRITISH VIOLETS

Plants exactly answering to the foregoing description come to me occasionally from various localities. Quite lately the original description given in Ledebour's *Fl. Rossica* i. 249 (1842) has come under my notice. Schultes insists on "foliis reniformi-cordatis" for this variety; wherefore our *hirsuta* (which otherwise fully deserves its name) is clearly not the var. *hirsuta* of Schultes.

S. Devon:—Miss Peck.

Somerset:—Christon; E. S. G.

Glo'ster.:—Miss Roper. Fairford; Mr. Druce.

Oxford:—Goring; Minster Lovell; Mr. Druce.

Cambridge:—Fleam Dyke; Mr. Wilmott.

var. *variegata* var. nov.

Flowers pale, streaked or splashed with white and violet: *capsule* obtusely angled, the angles *clothed with long hairs*.

Oxford:—Wychwood; Mr. Druce.

var. *lactiflora*.

V. hirta var. *lactiflora*, Reichb, Ic. Fl. Germ. et Helv. iii. f. 4493 (1839).

Petals milk-white, or white streaked with purple; with whitish or lilac spur; or lateral and inferior petals white, two upper streaked with violet (chiefly on the outside), *spur* reddish violet, inferior petal with dark purple lines; upper *petals* inclining upward and outward; *capsule* *glabrous* green mottled with purple.

Somerset:—Cadbury Camp, Clevedon; Banwell Wood;
E. S. G.

Kent:—Miss Murray.

S. Devon:—St. Mary Church; Miss Peck.

Oxford:—Wychwood; Mr. Druce.

No. 71 in Herb. Bab. " *V. hirta fl. alba* from Harleston, Norfolk, is apparently identical with var. *lactiflora* Reichb."

VIOLA HIRTA

The differences in colour of flowers and direction of petals in these two vars.—*lactiflora* and *variegata*—would not suffice to separate them, but the *glabrous* capsule of the one and the *shaggy* capsule of the other marks an essential difference.

var. *glabrata*.

V. hirta, var. *glabrata*, Beeby, in Journ. Bot., xxx. 68 (1892).

V. sciaphila, in Bab., Man. ed. 7, 40 (1874); (not *V. sciaphila* Koch).

A variety of *V. hirta* with glabrous capsules was found by Rev. W. W. Newbould, and referred to in Bab. Man. as *V. sciaphila* (sic). Mr. Beeby decided that the plant differed from *V. hirta* (type) only in its glabrous capsule, and could not therefore be identified with *V. sciaphila* Koch, which has leaves shaped almost exactly as those of *V. mirabilis*. The var. *lactiflora* is probably identical with the var. *glabrata*.

Cambridge:—Harston; Mr. Newbould.

Northants.:—Barnock; Mr. Druce.

Among the foregoing varieties there may be one or two not unworthy of a higher status. I refer especially to the vars. *Foudrasi* and *hirsuta*. Not having tested them sufficiently, I leave them where they are, trusting that further investigation may be accorded them.

forma *imberbis* f. nov.

Without hairs on the lateral petals. Felsted, Mr. B. P. Waller.

The spur of this violet was shorter than that of *V. hirta* (type), and the capsule not merely hairy, but shaggy. (No. 1291, Herb. Gregory.)

BRITISH VIOLETS

forma rosea, Beeby.

Upper petals directed upward and outward ; flowers rose-pink.

Somerset :—Christon ; Wrington ; E. S. G.

Kent :—Sandling, Hythe ; Miss Murray.

Berks. :—Bagley, Childswell Farm ; Mr. Druce.

Cambridge :—Fleam Dyke (plentiful) ; Mr. Wilmott.

forma revoluta.

V. hirta var. *revoluta*. Heuff. ex Reichb., Ic. Fl. Germ. et Helvet. iii. f. 4493 (1839).

V. hirta sub.-var. *revoluta*, Rouy et Foucaud, Fl. de Fr. iii. 20 (1896).

Spur curved, ascending to the petals and tipped with little tails.

Cambridge :—Fleam Dyke ; Mr. Wilmott.

(In the same parcel several *hirta* forms had bracts above the middle of the peduncle.)

A violet from Salcombe Hill, near Sidmouth, S. Devon, (Herb. Brit. Mus. and No. 60, Herb. Bab., and in Herb. Ley, collected by the Rev. Moyle Rogers), is interesting, and requires further study—preferably when fresh. It is characterised by its very large stipules. Dr. Neuman describes his f. *fraterna* of *V. hirta* as having stipules 1-2 cm., and f. *pinetorum* as having them 2-4 cm. in length.

Viola calcarea Gregory.

V. CALCAREA, Gregory in Journ. Bot. xlii. 67, t. 457 (1904).

V. hirta var. *calcarea*, Bab., Man. ed. 2, 35, (1847) pro parte.

A small more or less glabrescent plant, without stolons ; rootstock branched, branches thick, woody ; leaves small, ovate or oblong-ovate, cordate ; peduncles mostly longer than



VIOLA CALCAREA, GREGORY.

(No. 692 Herb. Gregory.)



VIOLA CALCAREA

the leaves; *sepals* oblong-ovate; *petals* narrow (the four upper ones placed at a curious angle, resembling a St. Andrew's Cross); *spur* very short, almost imperceptible, straight, conical; flowers very small, violet, or mauve, with throat of the same tint; summer leaves elongating somewhat, and becoming conduplicate; *capsule* small, roundish, depressed.

P. IV.—V.

At least a week or two later in flower than *V. hirta* and var. *Foudrasi*.

Cornwall:—"On the exposed hills of sand, made up chiefly of commuted sea shells," at Perranporth; Mr. Davey.

S. Devon:—Near Torquay; Miss Peck.

Somerset:—Worle Hill; Bleadon Hill; etc., E. S. G.

Dorset:—Studland; Herb. Druce.

Oxford:—Wychwood; Mr. Druce.

Cambridge:—Newmarket Heath; on the Gogmagogs (of a pale pink colour), Mr. Headly. Fleam Dyke; Mr. Headly, Mr. Wilmott.

Babington's description of his variety *calcareo* was inadequate and would cover more than one of the smaller varieties and forms of *V. hirta*. With no further aim, than my own edification and interest, I made an exhaustive examination of the plant from year to year, in all its stages of growth and development. These observations provided convincing evidence that at least one of the forms included under Babington's var. *calcareo* should be raised to specific rank. It was necessary, therefore, that a correction should be made, reluctant though one felt to disturb the existing nomenclature. Although Babington, in *Man.* ed. 2, 45 (1847), speaks of his var. as having "flowers smaller, peduncles much longer than the leaves; sepals oblong-ovate," no mention is made of the straight almost imperceptible *spur*, nor of the general outline of the petals—forming a cross—nor, again, of the distinctive conduplication of the summer

BRITISH VIOLETS

leaves and the flowering delayed a week or two beyond that of *V. hirta*.

Whilst writing thus I am forced to admit that although *V. calcarea* (in sensu stricta) is a widely different plant in appearance from *V. hirta* (type), the two are connected by a whole series of intermediates. The same thing occurs elsewhere; *V. Riviniana* Reichb. and *V. canina* L. have little resemblance when each is true to type, although they, too, are connected by a string of intermediates; again, *V. stagnina* Kit. and *V. nemoralis* Kütz. of the Huntingdon Fens can be easily separated, if a botanist is willing—as in days gone by—to cast aside, as worthless, such plants as are not true to type.

In my examination of sheets of *V. calcarea* Bab. in the British Museum Herbarium; at Kew; at the Linnean Soc., Burlington House; and in Babington's Herbarium at Cambridge, I find a regular pot-pourri of small vars. of *V. hirta*, chiefly the *V. Fondrasi* of Jordan. In fact, Babington's description of *V. calcarea* in part covers this plant, when he writes "peduncles much longer than the leaves."

In the British Collection of the National Herbarium I found specimens of *V. calcarea* Greg. from three localities:—Eastwear Bay, Folkestone (Rev. G. E. Smith) in Mrs. Robinson's Herbarium; "Downs, near St. Margaret's, E. Kent, May 8, 1889" (Rev. E. S. Marshall); and "Boxhill, in the turf, Ap. 6, 1861" (H. Trimen).

In Babington's Herbarium at Cambridge, in addition to specimens from the Gogmagogs, there are two plants of *V. calcarea* from Portland; four plants from Copley Hill, Cambridge; one sheet (of one plant only) from Kenley, Surrey (Groves); and one plant from Blandford (Newbould).

In Borrer's Herbarium at Kew, I found four plants of true *V. calcarea* from Box Hill, Surrey; and four others contributed by Mr. Woods.

In Watson's Collection, at Kew, there are two plants (contributed by Babington) from the Gogmagogs.

VIOLA PALUSTRIS

The general herbarium at Kew contains four specimens of *V. calcarea* from Barton, Beds. (Saunders), and four very typical plants from Beachy Head (Roper).

A hoary form of this violet,—especially hairy on the petioles and under surface of leaves—has been found by Miss Larter on grassy banks of red clay near Torquay. The same hoary plant has come to me from sand hills between Newquay and Perranporth (Mr. Davey). With the latter, a series of miniature violets was received, including:—

V. hirta, var. *Foudrasi*, *V. Riviniana*, forma *nemorosa*, and *V. Riviniana*, forma *minor*.

Viola palustris Linn.

Marsh Violet.

V. PALUSTRIS. L., *Species Plantarum* 934 (1753); Syme, *Eng. Bot.* ii. 13, t. 170 (1864); Reichenbach, *Fl. Germ. Excurs.* 704 (1832), and *Icon. Fl. Germ. et Helv.* iii. f. 4491 (1839); Hartman, *Skand. Fl.* ed. 11, 224 (1879); Nyman, *Conspectus Fl. Europ.* 79 (1878); Koch, *Syn. Deutsch. u. Schweizer Fl.* ed. 3, i. 193 (1890); Rouy et Foucaud, *Fl. de Fr.* iii. 35 (1896); Neuman, *Sveriges Fl. Ex.* 8 (1901); Bab., *Man.* ed. 9, 43 (1904); Becker, *Violenstudien*, 312 (1910).

ROOTSTOCK:—emitting slender underground (sometimes reddish) rooting stolons, bearing stipules and leaves at the nodes.

STIPULES:—ovate-acuminate (6.8 × 3.5 mm. at widest part), green tinged with red, *membraneous* with glandular teeth.

LEAVES:—few, reniform-cordate, almost entire, glabrous, or the least developed rarely slightly hairy.

FLOWERS:—few, scentless, of a pale or dark lilac colour (sometimes white), with darker branched veins; *sepals* oval, obtuse, with hyaline margins (4.5 × 2.4 mm.); *spur* flat, obtuse, slightly longer than calycine appendages;

BRITISH VIOLETS

anther-spurs curved, short and thick; *stigma* flattened;
capsule glabrous, nodding; fruit stalk erect.

P. IV.—V.

Boggy places; widely distributed, locally common.

forma alba.

Killarney (with pure white flowers); Mrs. Jenner.

forma major.

Devon, S.:—Nr. Moreton Hampstead; Mr. Druce. Belstone;
Misses Peck and Larter.

***Viola epipsila* × *palustris*.**

Viola epipsila × *palustris*, Ruprecht, Hist. Stirp. Fl. Petrop.
Diatr. +8 (1845).

V. Ruprechtiana Borbás in Koch, Syn. Deutsch. u. Schweizer
Fl. ed. 3. i. 193 (1890).

LEAVES:—(spring), often as large as those of *V. epipsila*;
sometimes more the size of the leaves of *V. palustris*,
slightly pointed and somewhat hairy on the under sur-
face, on *long petioles*; (summer), often glabrous, unusually
large, though less broad than those of *V. epipsila*; not
so shiny, nor of such firm consistency, as those of *V.*
palustris.

FLOWERS:—bluish-lilac, lower petal 12-15 mm.; as a rule
the flowers are smaller than those of *V. epipsila*, but in
the plant from Dartmoor, referred to below, they were
large and pure white, on extremely long peduncles.

A very luxuriant plant with large flowers of a pure
white colour (found by Miss Green on Dartmoor in 1906)
was sent to Dr. Neuman, who identified it as "*Viola*
epipsila × *palustris* f. *albiflora*."

On the other hand, in the Neuman, Wahlstedt and Murbeck
set at South Kensington, there is a violet, nearly matching

HYBRID OF VIOLA EPIPSILA

Miss Green's plant, which is labelled :—" *V. epipsila* Ledebour Ind. Sem. Hort. Dorp., 1820, p. 5. *A. Scanica* (Fries.), Neum., Wahlst., Murbeck, *forma albiflora*."

Viola epipsila not having been detected in Britain at the time of Miss Green's discovery, doubt was thrown by certain botanists on the identity of the supposed hybrid, and the plant was temporarily excluded from a place in our British flora.

In October 1910 I had the extreme pleasure of turning up specimens (3) of what I have no hesitation in identifying with *V. epipsila* Led. in the herbarium of Mr. W. F. Miller. The exceedingly large leaves and fruits first attracted my attention; on examination the leaves were found to be sparsely pubescent on the under side; the petioles distinctly hairy with spreading hairs; the apices of the upper leaves usually with short broad points; the *bracts* *always* above the middle of the peduncle. As these plants were found on Dartmoor (Aug. 1885) we may without hesitation accept Dr. Neuman's dictum concerning the plant gathered in 1906 by Miss Green.

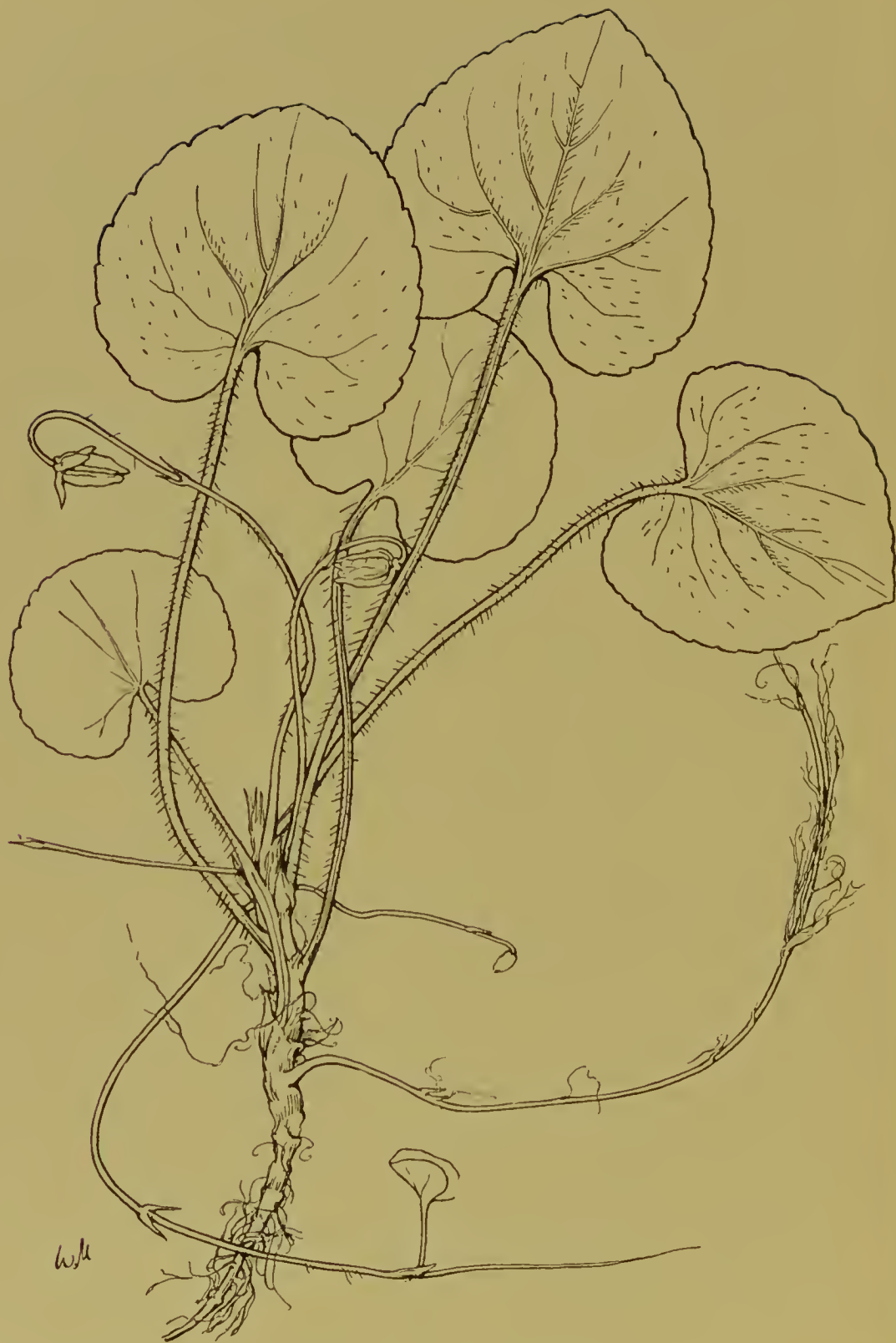
Viola epipsila Ledebour.

V. EPIPSILA, Ledebour in Index sem. hort. Dorpat, 5 (1820), and in Fl. Rossica i. 247 (1842); Reichenbach, Ic. Pl. Crit. i. 43, t. 51 (1823); Fries, Mantissa ii. 51 (1839); Nyman, Conspectus Fl. Europ. 79 (1878); Hartman, Skand. Fl. ed. 11, 224 (1879); Koch, Syn. Deutsch. u. Schweizer Fl. ed. 3, i. 193 (1890); Becker, Violenstudien, 315 (1910).

V. palustris L. sub-spec. *epipsila*, Rouy et Foucaud, Fl. de Fr. iii. 35 (1896); Neuman, Sveriges Fl. Ex. 7 (1901).

The following description is given by Ledebour in Fl. Rossica i. 247 (1842):—

Viola epipsila (Ledebour, Ind. sem. hort. Dorpat. [1820], p. 5), "foliis geminis reniformi-cordatis cordatisve subtus



VIOLA EPIPSILA, LED.

(No. 1608a Herb. Gregory.)

[This illustration has been somewhat lavishly supplied with hairs, which are also more noticeable in black and white.]

VIOLA EPIPSILA

pilosiusculis (demum subglabris), petiolis immarginatis, pedunculis supra medium bibracteatis, sepalis oblongis obtusis; appendicibus subtruncatis, calcare crasso incurvato rotundato sepalis parum brevior, petalis parce barbatis, stipulis liberis ovatis acutis glanduloso-denticulatis; glandulis stipitatis.

V. palustri affinis, tamen praeter notas indicatas floribus majoribus, calcare longiori dignoscenda. Ulterius observanda."

A description of our British and Irish *V. epipsila*, taken from plants in a fresh condition, is here given:—

HABIT:—a plant with long rooting branched stolons, bearing leaves and brown stipules at the nodes: few leaves and flowers.

STEM:—thick, sappy, 8-15 cm.

LEAVES:—(spring) with open sinus, the margin having somewhat noticeably outstanding teeth; the first reniform (3.4 × 4.5 cm.) with or without points; the following broadly ovate-cordate (4.6 × 4.5 cm.) with short blunt points, all more or less pubescent on the lower surface, becoming sub-glabrous in summer, the nerves with scattered hairs, petioles more or less hairy with spreading hairs, thick-ribbed, winged.

Our plants tend to be more leafy than accords with Ledebour's "*foliis geminis*." There is, however, little doubt that in their early state both *V. palustris* L. and *V. epipsila* Led. may be correctly described as "*foliis geminis*," but that later (as is indeed the case with all other violets of the Nominium Section), the leaves develop in number as well as size; still, however, remaining *few*.

STIPULES:—*free*, brown suffused with violet colour, somewhat membranous, usually entire, but occasionally short-fringed.

FLOWERS:—pale or dark lilac (sometimes pure white, f. *albiflora*, Ex. 41 Neum. Wahls. and Murbeck), lower petal strongly contracted, usually with 9 slightly

BRITISH VIOLETS

branching veins: *bracts* always *above* the middle of peduncle; *sepals* oblong, more or less pointed, the lowest 7.8×2.3 mm.; *spur* broad, flat, twice exceeding the calycine appendages; fruiting peduncle ultimately erect as in *V. palustris*; *capsule* glabrous, measuring in dehiscence about 1 cm. in length.

Hairy petioles is a feature of the British *V. epipsila*, a character absent from descriptions of the plant by Continental authors.

HABITAT:—in open boggy places among *Sphagnum*, or on wet mossy places by streams and in alder holts among *Sphagnum*, in shade and shelter.

Cornwall, W.:—Dr. Vigurs, Sep. 1912.

Devon, S.:—Hamilton Tor, near Moreton Hampstead (sub nom. *V. palustris*), Mr. W. F. Miller (1885). Hamilton Tor, Upper Nutworthy (ascending to 1400 feet); Mr. Druce, 1911. Belstone, near Okehampton; Misses C. L. Peck and C. E. Larter.

Berks.:—Burghfield; Mr. Druce, July 1911.

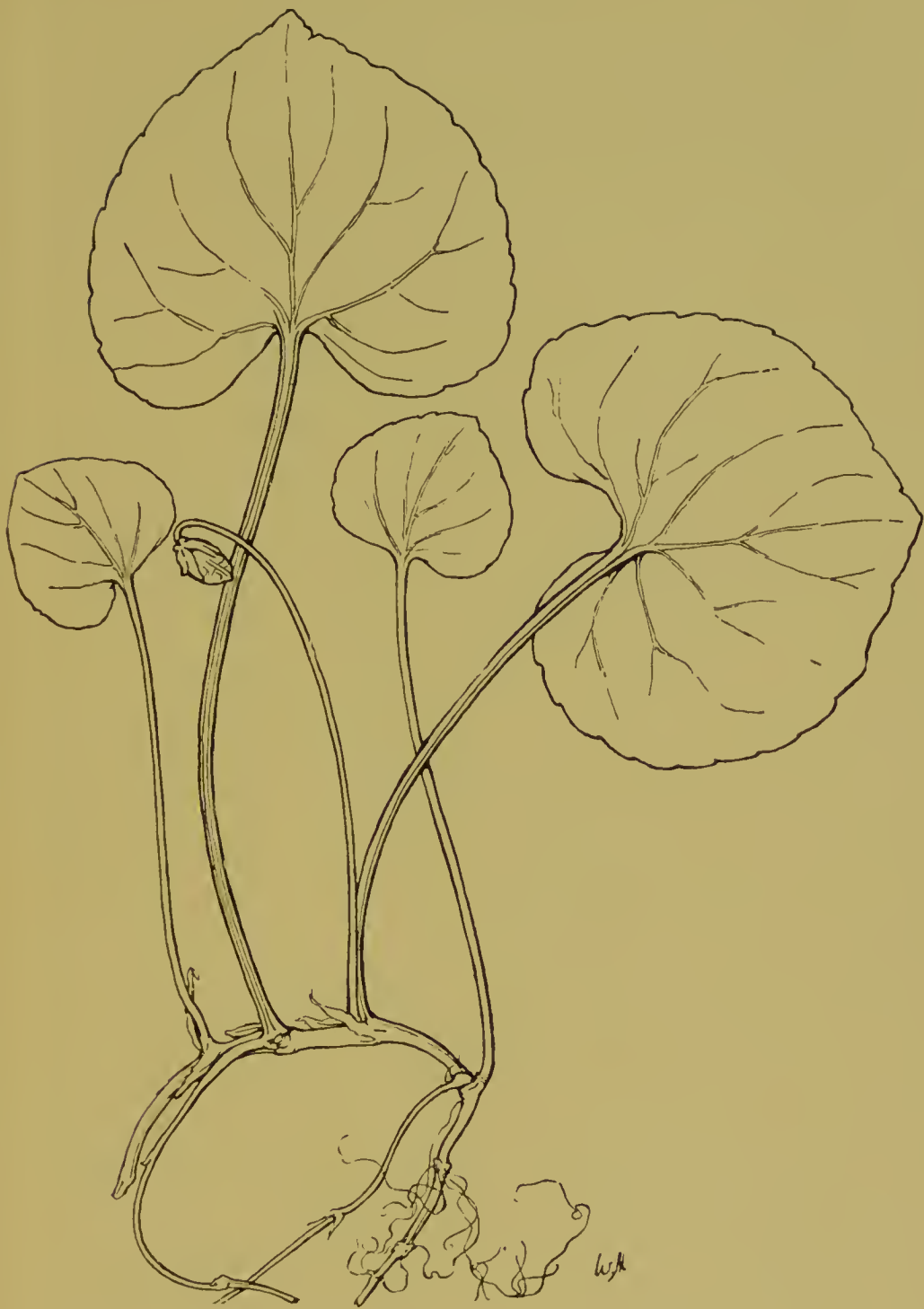
Carnarvonshire:—Coed y Fynnon; Mr. Druce, June 1908.

Co. Kerry:—Killarney; Mrs. Jenner and Mr. Druce.

Some of the plants referred to above agreed with descriptions of *V. epipsila* except in their comparative freedom from hairiness; these I have placed under the *forma glabrescens* of Ascherson and Graebner (Nos. 1603, '04, '06, '07 Herb. Gregory). Other plants were excessively hairy but quite small ($2\frac{1}{2}$ -6 cm.); these I have labelled *V. epipsila, forma minor* (Nos. 1602, '05, Herb. Gregory).

On the other hand, with regard to plants where the balance of characters is in favour of *V. palustris*, I have followed some Continental writers by introducing a *forma major* of that species.

Rouy et Foucaud (Fl. de Fr. iii. 35) reduce *V. epipsila* Led. to the rank of sub-species. Extreme forms of *V.*



V. EPIPSILA, VAR. GLABRESCENS, ASCHERS AND GRAEB.
(No. 1594 Herb. Gregory.)

BRITISH VIOLETS

palustris Linn. and of *V. epipsila* Led. appear quite worthy of specific rank, but wherever the two occur in proximity a puzzling series of intermediates is to be seen. As the



*V. EPIPSILA, f. MINOR.*¹

(No. 1605 Herb. Gregory.)

same difficulty arises between any other two allied species of violets, I am following the customary precedent of giving each its usual rank of species.

In respect of *V. epipsila*, Mr. Druce has appended an interesting footnote:—" *V. epipsila* Led. was thus referred

¹ This representative of *V. epipsila, f. minor* is the most hairy example in my collection, but in the figure the leaf-blades are endowed with more hairs than they naturally possess.

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Viola silvestris L.

V. SILVESTRIS. L.

Schultes, Öster

Pl. Criticae, i.

707 (1832);

Violenstudien

V. canina L. var. s

(1828).

V. silvatica, Fries

and in Mant. 1

V. Reichenbachian

(1857); Syme

HABIT:—ascendin

short flowerles

prostrate cleis

and remaining

HEIGHT:—in flow

STIPULES:—4-8 m

subtend; lance

fine acuminate

1-2 mm.

LEAVES:—(rosette

cm., sub-renifo

with closed sin

VIOLA SILVESTRIS

to in Bab., Man. ed. 2, 35 (1847):—‘I have reason to think that an imperfect specimen of *Viola* from the island of N. Uist, is the *V. epipsia* [sic] (Led.) Fries.’ But Babington evidently became convinced the suggestion was untenable, for he omitted the plant from more recent editions. This record is doubtless the origin of its inclusion in the list of ambiguities, etc. in the Lond. Cat. ed. 7, and in the ‘Appendix of Excluded Species’ in Hooker’s Students’ Flora.”

Viola silvestris Lam. emend. Reichb. Wood Violet.

V. SILVESTRIS. Lamarck, Fl. Fr. ii. 680 (1778); Kit. ex Schultes, Öster. Fl. ed. 2, i. 423 (1814); Reichb., Icon. Pl. Criticae, i. 80, t. 94 (1823), and Fl. Germ. Excurs. 707 (1832); Bab., Man. ed. 9, 44 (1904); Becker, Violestudien 224 (1910).

V. canina L. var. *silvatica*, Fries, Nov. Fl. Suec., ed. 2, 272 (1828).

V. silvatica, Fries ex Hartm. f. in Bot. Notiser 81 (1841); and in Mant. iii. 121 (1842).

V. Reichenbachiana, Jord. ex Boreau Fl. Cent. Fr. ed. 3, ii. 78 (1857); Syme, Eng. Bot. ii. 20, t. 174 (1864).

HABIT:—ascending; flowering branches axillary, from a short flowerless rosette of leaves; many—more or less—prostrate cleistogamous branches put forth in autumn, and remaining over winter.

HEIGHT:—in flower, 5-15 cm.

STIPULES:—4-8 mm., always shorter than the petioles they subtend; lanceolate, tapering from a broadish base to a fine acuminate point, fringed with long teeth measuring 1-2 mm.

LEAVES:—(rosette) glabrous, shining; full grown 3-4 × 2-3 cm., sub-reniform or tapering to points from a cordate base, with closed sinus, often lasting over winter and becoming

BRITISH VIOLETS

dark and metallic-looking, especially on the lower surface; stem leaves generally much smaller, cordate, gradually decreasing in size beyond the middle and terminating in a short acuminate point, glabrous, or the topmost having scattered short hairs on the upper surface, chiefly on the basal lobes; the margin more or less crenulate (the Irish specimens have deeper crenatures).

FLOWERS:—rather small (compared with those of *V. Riviniana*), scentless; lilac, or of a reddish-lilac colour, or rose-coloured (*f. rosea* Neum.), or nearly white (*f. pallida* Neum.), or bone-white (*f. leucantha* Beck); *sepals* $6-7 \times 1$ mm., lanceolate-acuminate; calycine appendages small,¹ $6-7 \times 1$ mm., the bases rounded (not toothed or lobed), becoming indistinct in fruit; *petals* narrow-oblong, *not overlapping*; upper petals 5-8 mm., bending back sharply; the lower three petals darker at the base; veins mostly simple, not usually extending to the edge; *spur*:—*laterally compressed*, slender, entire, or scarcely furrowed, *usually darker* than the petals, and 2-3 times longer than the calycine appendages; *anther-spurs*:—narrowly lancet-shaped or frequently straight, longer than anther with its apical scale.²



CAPSULE:—glabrous, angled, acute; fruit with fertile seed produced, to a limited degree, by early open flowers, as well as—in greater quantity—by later cleistogamous flowers, on a separate branch system. (See Kerner and Oliver, *Nat. History of Plants*, ii. 393.) In my experiments with regard to seed production by early open flowers, I found the *caulescent* series of violets to be less disposed to set seeds from the spring flowers than

¹ "rudimentary," Koch.

² Rouy et Foucaud have "éperon gros." Neuman has "spur narrow, tapering to a point."

VIOLA SILVESTRIS

the *acaules* series; but such seeds as were produced germinated more quickly than those of the *acaulescent* violets.

Easily distinguished from *V. Riviniana* when both are true to type, but connected with it by many puzzling intermediates. It differs chiefly in its smaller flowers, with much narrower petals, of a lilac or reddish-lilac hue; the spur, darker than the petals, has its lower side nearly straight and the upper slightly curved, so that it becomes thicker towards the apex. A distinguishing character lies in the calycine appendages, which in *V. silvestris* are small, roundish, becoming indistinct, and in *V. Riviniana* are large, broad, lobed, or toothed and accrescent.

P. III.—V.

HABITAT:—Open places in woods and on hedge-banks.

Frequent. Less widely distributed than *V. Riviniana*.

Devon, S.:—Near St. Mary Church; Miss Peck and Miss Larter.

Devon, N.:—Many localities near Barnstaple: Mr. Hiern.

Somerset, N.:—Near Bath; Miss Peck. Abundant about Loxton; Christon; Winscombe and Uphill; E. S. G.

Hertfordshire:—Good examples from Knebworth; May 3, 1911, E. S. G.

Cambridge:—Gamlingay Wood; E. S. G.

var. *punctata*, comb. nov.

V. maculata, Giraudias, Herb. Char.-Inf. (1881-2).

V. silvestris sub.-var. *punctata*, Rouy et Foucaud, Fl. de Fr. iii. 13 (1896); Exsicc. Soc. Rochel, No. 3422 (p.p.).

V. silvestris, var. *punctata*, Druce, in Hayward's Bot. Pocket Book, ed. 13, 24 (1909).

HABIT:—of *V. silvestris* and *V. Riviniana*, though not always possessing the central *non-flowering* rosette (in some specimens the central shoot is the most floriferous part); stem purplish, deeply grooved.

BRITISH VIOLETS

HEIGHT :—5-14 cm.

STIPULES :—(lower) purplish, averaging 1 cm. in length, broad at base, cuspidate-fimbriate, teeth more than half the breadth of stipule at its widest part; (middle) greener and shorter (8 mm.), long-toothed; (upper) still greener, the topmost as long as—sometimes longer than—the leaf it subtends, not so broad as the lower ones but with equally long teeth.

LEAVES :—(perennial) dark green, bronze or reddish, especially on the lower surface, on long petioles (3-5 cm.) lamina ovate-cordate, slightly hairy above, on the basal lobes, 3-4 cm, not including the lobes, crenate; (spring), fresh green on shorter stalks, averaging 1 cm.

FLOWERS :—small, pale reddish lilac, or almost white, with whitish eye and pale or dark *furrowed* spur; *sepals* long (5-6 mm.), purplish, narrow (scarcely exceeding 1 mm.), white-margined, acuminate; calycine appendages as in *V. silvestris*; *petals* not overlapping; upper petals sometimes sub-erect, but often divaricate to such an extent that the sides of the petals form the apex of the flower; lateral petals narrow (4 mm.), bearded, longer than the lower, which is carinate and pointed, veins not reaching apex; the lateral and lower petals have *purple blotches*, that of the lower petal larger than the others; *anther-spurs* long and narrow. (*Riviniana* character.)

CAPSULES :—glabrous, trigonous with one flat side, stigma beak pellucid.

The later cleistogamous branches remain erect, not becoming prostrate as those of *V. Riviniana*.

Under cultivation in my garden at Weston-s.-Mare the flowers of this var. decreased in size; in Mr. Hunnybun's garden at Huntingdon they have increased considerably.

Devon, S. :—Near Dartmouth; Miss Larter and Mr. Hiern.

Near St. Mary Church; Miss Peck.





VIOLA SILVESTRIS VAR. *PUNCTATA*.

BRITISH VIOLETS

- Devon, N.:—Several localities near Barnstaple; Mr. Hiern.
Somerset:—Plentiful at Christon; Loxton; Banwell; Winscombe, etc.; E. S. G.
Wilts.:—Farleigh Castle (growing and flowering on old walls); E. S. G., 1884.
Dorset:—Dr. C. E. Moss.
Surrey:—Wimbledon Common; Miss Murray.
Herts.:—Harpenden; Dr. C. E. Moss and Mr. E. J. Salisbury.
Bucks.:—Bradenham; Mr. Druce.
Cambs.:—Dr. C. E. Moss.
Hereford:—Great Doward; the late Rev. A. Ley.
Co. Tyrone:—Clogher; Miss Peck.

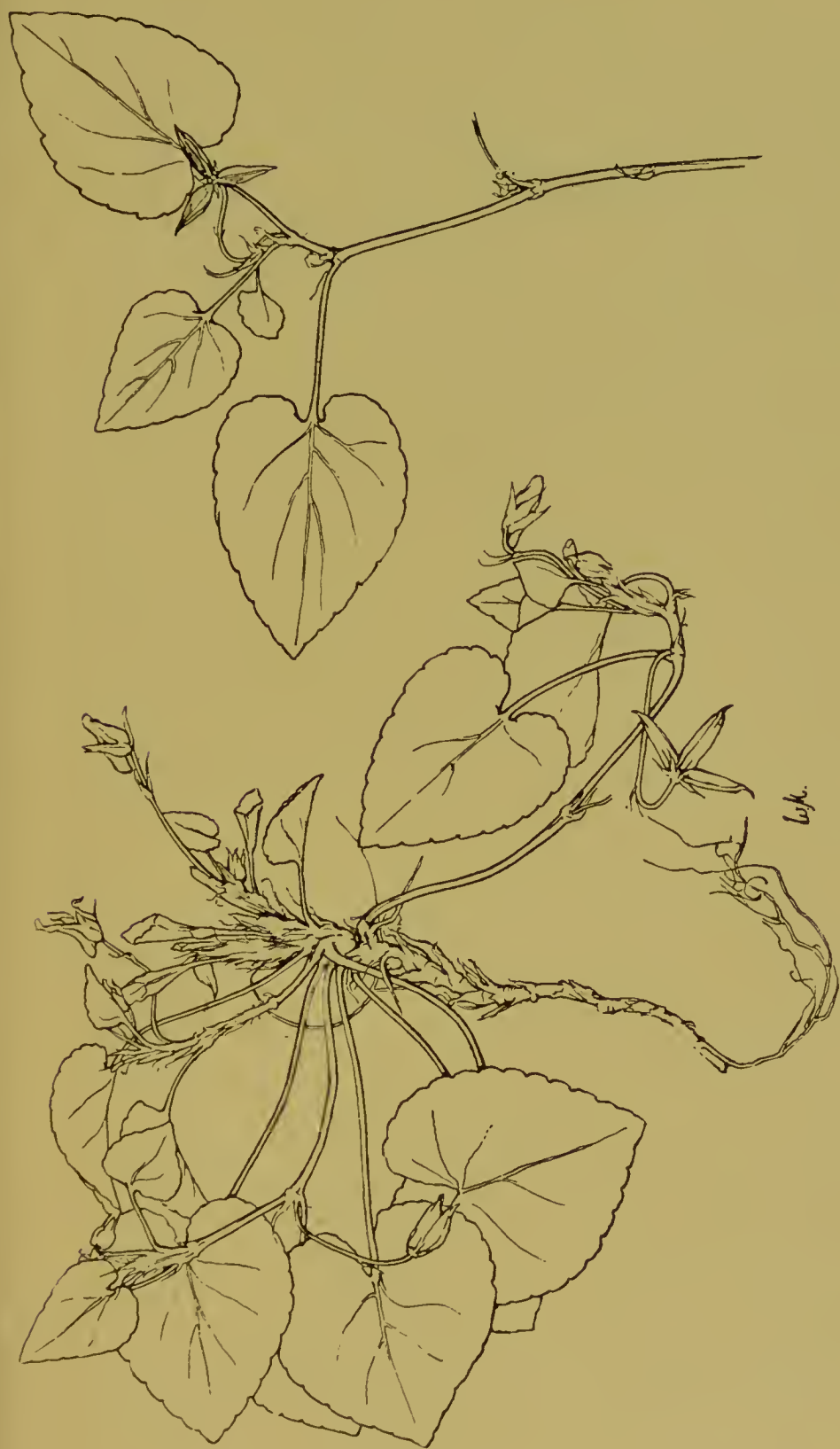
A description of *Viola arenicola* Chabert, by Rouy et Foucaud (Fl. de Fr. iii. 15), at first led me to believe that it was this var. of *V. silvestris*, but Chabert's own description undeceived me and convinced me that—although very closely allied—the plants are not identical.

A confidence—bred of my intimacy with the sporting tendencies of our British violets—induces me to prophesy that Chabert's *V. arenicola* will yet be detected by some diligent and enthusiastic worker. For that reason I append the following extract from Chabert's note upon the plant.

Viola arenicola Chabert, as described by Chabert in Bull. Soc. Bot. de France, xviii. 197 (1871):—

“ Cette espèce diffère donc du *V. silvestris* Lamk. (Koch, Syn. ed. 2, p. 91, etc.) et par conséquent des deux formes distinguées par M. Jordan (*V. Riviniana* Rchb. et *V. Reichenbachiana* Jord.) (1):—par sa racine *pivotante* produisant une ou plusieurs souches épaisses et *longuement écailleuses* sur une longueur de 1-5 cm. par les débris persistants des pétioles des anciennes feuilles. (2):—par la *persistance* pendant et après la floraison, de la rosette formée par les





VIOLA SILVESTRI VAR. *PUNCTATA* (late stage.)

(No. 1487 Herb. Gregory.)

BRITISH VIOLETS

feuilles radicales, tandis que dans les diverses formes du *V. silvestris*, la rosette se détruit ordinairement pendant la floraison et est remplacée bien plus tard par de nouvelles feuilles. (3):—par la *petitesse* constante de sa taille, de ses fleurs et de ses feuilles, ses tiges non rameuses et hautes de 2-6 (rarement 8) cm. (4):—par ses feuilles *obtus*es, glabres, d'un vert sombre en dessus, d'un vert rougeâtre ou lie de vin et fortement veinées en dessous, par les nervures rougeâtres. (5):—par les stipules inférieures incisées-dentées et non ciliées-fimbriées, et surtout par les *supérieures entières égalant le pétiole* ou plus longues. (6):—par le pétale inférieur échancré. (7):—par le port et l'aspect sombre et noirâtre de la plante vivante. . . .

“ Le *V. arenicola* a plus de rapport avec le *V. arenaria*, DC. pour lequel il a été pris par plusieurs botanistes parisiens et avec le *V. rupestris* Schm. Semblable à eux par ses feuilles et son faciès on l'en distingue facilement par sa souche allongée, écailleuse, par ses sépales lancéolés-linéaires et non pas oblongs-lancéolés ou ovales-lancéolés, par la forme et la longueur relative de ses stipules etc. . . .

“ Dans la première éd. de leur Fl. des environs de Paris, MM. Cosson et G. de St. Pierre admettent un *V. silvestris*, s.-var. *pumila*, qu'ils décrivent ainsi: 'Tiges de 2-4 cm. feuilles très petites, souvent à peine acuminées, fleurs petites.' Les échantillons conservés sous ce nom dans l'herbier de Paris, de M. Cosson se rapportent à notre *V. arenicola*. Mais dans la deuxième éd. ils passent cette sous-var. complètement sous silence, bien plus, la description qu'ils donnent du *V. silvestris*, exclut notre plante dont les tiges ne sont ni rameuses ni hautes de 1-3 décim., qui n'a ni les feuilles acuminées ni toutes les stipules plus courtes que le pétiole etc. Aujourd'hui, M. Cosson restant convaincu que les caractères de notre Violette sont des modifications dues à l'influence du sol et de la station, la rapporte toujours au *V. silvestris*, comme var., et la nomme *V. silvestris* var.

VIOLA SILVESTRIS

arenicola; l'épithète de *pumila* a été abandonné pour éviter la confusion avec la var. *pumila* du *V. canina*. Pour moi, qui n'ai jamais pu trouver d'intermédiaire qui la reliât au *V. silvestris* fort abondant dans les bois et les taillis des mêmes localités, je crois que ses caractères sont amplement suffisants pour l'élever au rang d'espèce d'accord en cela avec les botanistes parisiens qui l'ont distinguée en la nommant par erreur *V. arenaria*, et je propose de l'appeler *Viola arenicola*. Elle se place entre le *V. arenaria* DC. et le *V. silvestris* Link., particulièrement la forme nommée par M. Jordan *V. Reichenbachiana*."

Our var. *punctata* differs from the above by :—

- (1.) Lower leaves larger, not obtuse, nor wholly glabrous.
(Compare § 4 of Chabert's description, p. 44, above.)
- (2.) Central rosette has flowers as well as leaves.
- (3.) The upper stipules do not exceed the petioles, nor even—in many cases—equal them; nor are they entire.
(Compare § 5 above, p. 44.)

forma *pallida*.

V. silvestris, f. *pallida*, Neuman, Sveriges Fl. 273 (1901).

Petals pale, bluish mauve, not reddish lilac; *spur pale*.
Wrighton, Somerset; E. S. G.

forma *rosea*.

V. silvestris, f. *rosea*, Neuman, Sveriges Fl. 273 (1901).

Plants having flowers of a deep pink colour and of a singularly graceful habit have been sent to me, from time to time, by Mrs. Jenner, from Beaufort, Co. Kerry.

forma *leucantha*.

V. silvestris, f. *leucantha*, Beck, Fl. Nied. Öster. 521 (1892).

This form, with bone-white flowers, is occasionally found. A good example was sent to me from Kent in 1910 by Mr. E. Goodwin.

BRITISH VIOLETS

When *V. silvestris* and *V. Riviniana* are found growing side by side in the same locality, the latter is always more abundant than the former, and is later in flower. In such localities many intermediates between the two species are to be found. The best examples sent to me are from Killarney (Mrs. Jenner). In one of these (No. 1558, Herb. Gregory) the intermediate spur is very characteristic and interesting. Other localities are indicated :—

Sussex :—Comber Wood ; Mr. Druce.

Berks. :—Basildon ; Mr. Druce.

Derby. :—Hollington : Mr. Druce (teste Becker).

V. Riviniana × *V. silvestris*, var. *punctata*, hybr. nov.

Combines the colour and narrow upper petals of var. *punctata* with the broad spreading lower petals of *V. Riviniana* (No. 1538, Herb. Gregory).

Devon, S. :—Near St. Mary Church ; Miss Peck.

Viola Riviniana Reichb.

VIOLA RIVINIANA. Reichb., Ic. Pl. Crit. 81 (1823); Fl. Germ. Excurs. 705 (1832); Ic. Fl. Germ. et Helv. iii. f. 4502 (1839); Koch, Syn. Deutsch. u. Schweizer Fl. ed. 3, i. 200 (1890); Neuman, Sveriges Fl. Ex. xi. (1901); Bab., Man. ed. 9, 44 (1904); Becker, Violenstudien 298 (1910).

V. Sylvatica var. *macrantha*, Fries, Mant. iii. 121 (1842).

V. Sylvatica sub-sp. *Riviniana* in Syme, Eng. Bot. ii. 19, t. 173 (1864).

V. silvestris, Lam., forma *Riviniana*, Rouy et Fouc., Fl. de Fr. iii. 14 (1896).

HABIT :—robust, ascending ; flowering branches axillary, from a short *flowerless rosette of leaves*. Rootstock without creeping shoots. Numerous prostrate cleisto-

VIOLA RIVINIANA

gamous branches are put forth in autumn, and remain over winter. These branches are chiefly developed under shade conditions. When the plant is exposed to full sunshine, it perfects seed from early open flowers.

HEIGHT:—in flower, 15-20 cm.

STIPULES:—(lower) somewhat membraneous, often suffused with purple; (upper) green; all from a broader base, tapering to long drawn-out points, irregularly fringed on both sides; the upper ones more and more green, with shorter fringe.



LEAVES:—(of the rosette) glabrous, reniform, *without* points, or—like the stem leaves—broadly ovate-cordate, *with* short points: (of the stem) somewhat *broader than long* (2-3 cm. long); upper surface of topmost leaves, with scattered hairs, especially on the basal lobes; these hairs longer than those on the upper surface of *V. canina* leaves.

FLOWERS:—large, *widely opened*, variable in colour but generally of a slaty-blue; scentless; the upper *petals* 7-10 mm. broad, all overlapping, broadly obovate, the lowest petal larger, with many dark, branched veins, usually extending quite to the apex: *sepals* narrow-lanceolate, the upper with a very short broad appendage, the lateral with a narrower and rounded one, the lowest pair with the largest and broadest appendages, which are squarish in outline and notched. The appendages *become accrescent* and are very noticeable as the fruit matures; whereas in *V. silvestris* the appendages become indistinct.

SPUR:—long (5 mm.), thick, inflated, truncate, *furrowed*, or notched at the apex; of a whitish colour.



ANTHER-SPURS:—long, straight, narrow, much longer than the anther with its apical scale.

BRITISH VIOLETS

CAPSULE :—glabrous, sharply *angled*, acute, each carpel with three furrows. Fertile seed is produced, to a limited degree, by early open flowers.

P. IV.—VI. and sometimes VIII.—X.

Open spaces in woods and on hedge banks. Abundant.

Especially when growing in shade, long cleistogamous branches are thrown out in autumn.¹ In these, the leaf characters become altered; the leaves on the primary stems are, for the most part, large, dark green, very broad for about the lower half, sometimes narrowing sharply and running out into a long tapering point. The primary stems often produce slender secondary branches, which bear smaller, more rounded leaves. Fertile seed is produced by capsules in axils of the leaves, near or at the apex of the stems, whilst many infertile apetalous flowers are to be seen in the axils of leaves nearer the base.

There is no doubt that these cleistogamous branches, gathered carelessly, late in the season, are often mistaken for infertile (or partially infertile) hybrids. The extraordinary fashion in which their leaves often take on characters, which are usually associated either with *V. silvestris* or with *V. canina*, makes such mistakes excusable.

In the sunshine of my garden at Weston-s.-Mare, cleistogamous branches were almost unknown to me; in my shady back-yard garden at Cambridge, it is impossible to ignore them. In 1909, I transplanted some *Riviniana* violets, which in sunshine had borne handsome flowers, to a shady spot, under a lilac tree. In the spring of 1910, the plants bore no flowers, and as a consequence ripened no seed; but in August of the same year, cleistogamous branches, measuring $1\frac{1}{2}$ to $3\frac{1}{2}$ dcm., were abundant, and plenty of seed was ripened. Further observations during the summer of 1911 proved that the cleistogamous branches (especially those arising from the

¹ Kerner & Oliver, *Nat. Hist. of Plants*, ii. pp. 394-95.

VIOLA RIVINIANA

centre of a plant) tend to be erect during July, but gradually bend over and become prostrate as the capsules ripen.

var. *diversa*, var. nov.

(This variety was recorded, with notes, but without a Latin diagnosis, in Report Bot. Exch. Club, ii. 496.)

Primo vere pusilla, erecta, congesta, floribunda; foliis parvis, floribus parvis, vario colore tinctis, petalis procurentibus; mox diffusa foliis floribusque crescentibus, sed petalis aliquanto minus patulis quam in *Viola Riviniana* typica.

From different parts of the country I have received plants which I refer to this variety, although they differ from one another in certain unimportant particulars. These differences are noted in the following pages, but are not, in my opinion, sufficient to justify any further subdivision. I append a complete description of plants from the hill-side of Whinnie Brae, Galashiels (*see Frontispiece*), in the spring, summer, and autumn states. This description is followed by notes, indicating the points in which plants from other localities differ from the Whinnie Brae type.

V. RIVINIANA, VAR. DIVERSA, FROM WHINNIE BRAE.

A. SPRING STATE (April 29, 1910).

HABIT:—caespitose: in its earliest flowering stage much resembling *V. hirta* L.

HEIGHT:—6-8 cm.

ROOTSTOCK:—woody, dark coloured, furnished with plentiful bases of former cleistogamous leafage and long brown bare stems.

STIPULES:—long, narrow, ciliated, with long teeth at irregular intervals (the characteristic teeth of *V. Sylvatica*, agg.).

LEAVES:—(spring) pale green, very small; (summer¹)

¹ *i.e.* perennial leaves which have lasted through at least one winter.

BRITISH VIOLETS

blackish-green with purplish veins (7-15 cm. \times 15-20 cm.), ovate-cordate or reniform, puberulent above, with solitary scattered hairs below, or glabrous.

FLOWERS:—small, broad, roundish, spreading (*Riv.* char. though at first not nearly so open nor so spreading), thick texture, colour from pale lilac (sometimes almost white) in the early stage to dark reddish-purple later; upper *petals* much recurved, lateral bearded, about as long as, generally longer than, the lower which has branched veins; *sepals* lanceolate, two lower with broad squarish appendages (*Riv.* char.), puberulent—like the upper surface of the leaves—with narrow white margins, peduncles long, much exceeding the leaves, bracts above the middle; *spur* thick (three times exceeding the calycine appendages), blunt, furrowed, sometimes lighter, sometimes darker than petals, *often greenish*; *anther-spurs* crescent-shaped, longer than the anther with its apical scale, which is somewhat acute; ciliate papillae on lower half of scale are very noticeable.

CAPSULE:—(immature) glabrous, angled, stigma has fringe of hairs.

B. LATER DEVELOPMENT (May 23, 1910).

HABIT:—lax; stem roundish in section.

HEIGHT:—averaging 15 cm.

STIPULES:—(lower) broad at base, teeth longer than breadth of base of stipule and mostly on the outer side, few or no teeth above; (upper) half-entire and acuminate, but not so long drawn out as in *V. Riviniana* (8-10 mm.), narrow throughout and almost entire, green.

LEAVES:—(lower) 16 \times 22 mm. at broadest part¹; dark green, suffused with purple underneath; reniform-cordate, base oblique, somewhat decurrent, upper leaves hispid on upper surface.

¹ Leaf measurement taken from insertion of petiole, not including leaf-lobes.

VIOLA RIVINIANA

FLOWERS:—scentless, from pale in early stage to reddish-lilac or reddish-purple, much larger than April flowers (20 mm. in breadth); *peduncles* very long (10 cm.); *bracts* (6 mm.) above the middle of the peduncle, very narrow, scarcely toothed; a few hairs on the square peduncle immediately below the bracts; *sepals* of irregular lengths; the two lower 9 mm.; appendages lobed but roundish in outline; the lateral *sepals* also slightly lobed, much shorter (6 mm.); the upper shorter still; all bordered with a hyaline margin and the two lower obtuse; *petals* lateral bearded, longer than lower, the three having dark branched veins; the upper two spreading horizontally in the fully open flower; *spur* short, whitish, scarcely furrowed; *anther-spurs* crescent-shaped, as long as anther with its somewhat pointed apical scale; anther-lobes ciliate with short hairs.

CAPSULE:—(before dehiscence) scarcely angled or with roundish lobes: *stigma* beaked and bearded.

C. AUTUMN STATE (Aug. 22, 1910).

HABIT:—long straggling branches arching inwards from a woody base, often viviparous above.

LENGTH:—(cleistogamous branches) 14-16 cm.

STIPULES:—(lower) brown and withered; (upper) green, narrow, longly acuminate, all sparsely ciliate; stem, below their insertion, clothed with a few short hairs.

LEAVES:—(rosette) ovate-cordate, some almost cordate-lanceolate (10 × 12 to 30 × 35 mm.); (stem-leaves) ovate-lanceolate tapering to a point (30 × 25 mm.); all considerably hairy on the upper surface.

FLOWERS:—apetalous, on short pedicels which lengthen in fruit; *sepals* linear-lanceolate (5 × 1 mm.) with hyaline margins; bracts above the middle of the peduncle which is sparsely ciliate on the angles.

BRITISH VIOLETS

CAPSULE :—oblong, puberulent, apiculate, about 5 mm. in length before dehiscence ; from 6-10 mm. afterwards.

A plant growing in long grass by the Ettrick at Lindean, differed slightly from the type growing on the hill-side. The stems were shorter, the leaves were smaller, and the stipules tapered to a short, entire point (*not acuminate*). The corolla-spur was straight and *laterally compressed*; sometimes, but not always, furrowed and notched.

Although very near to the Whinnie Brae type, Mr. Druce's Sussex plant has more marked *canina* characters, as shown in its flowers with a white eye and a yellowish spur. It is therefore not so striking a form, and might have been passed over as an ordinary intermediate between *V. Riviniana* and *V. canina* had it not been for the previous discovery of the well-marked Scottish var. *diversa*, with which it has close affinity.

The Scottish type is, however, well matched by examples from Sandling, Kent (Miss Murray), and by plants from other localities in many parts of England and Ireland.

Specimens sent me by Mr. Crump from two localities near Halifax are sufficiently characteristic examples of var. *diversa* in spite of their somewhat smaller size in the later stages.

The intermediate position which var. *diversa* occupies between *V. Riviniana* and *V. canina* is brought into prominence by the treatment which the plant has received in Mr. Crump's excellent 'Flora of Halifax,' where, after having posed alternately as *V. canina* and as *V. Riviniana*, it has now crystallized into position under *V. Riviniana*.

V. Riviniana (type) is probably absent from the neighbourhood of Halifax, as it certainly is from the Selkirkshire habitat.

Mr. McTaggart Cowan, junr., sends me both *V. Riviniana* (type) and var. *diversa* from Newbattle (v.-c. 83) but states

that the var.
See B. E. C.

Yorkshire :

Devon :—Re

Barton.

Sussex :—Mr

Kent :—Sand

Oxford :—Mr

Bedfordshire

Yorks. :—Ha

Kirkcudbrigh

Selkirk :—W

Ettrick,

Edinburgh :—

Argyle :—Ob

C. Clare :—

Co. Kerry :—

Jersey :—St.

var. pseudo

V. pseudo-m

p. cxv

V. spuria, C.

V. sylvestri-

(1850).

V. mirabilis ×

354 (187

V. mirabilis

Branden

V. Uchtritzia

Fl. ed. 3,

VIOLA RIVINIANA

that the variety seems to be much commoner than the type.
See B. E. C. Report for 1911, vol. iii., part ii., 75.

Yorkshire :—Halifax, Elland Park Wood ; Aug. 1910.

Devon :—Roborough Down ; (Watson's Herb. at Kew) ;
Barton, St. Mary Church ; Miss Diana Warry.

Sussex :—Mr. Druce.

Kent :—Sandling ; Miss Murray ; Mr. Druce ; Mr. Standen.

Oxford :—Mr. Druce.

Bedfordshire :—Sandy ; Mr. Wilmott.

Yorks. :—Halifax ; Mr. W. B. Crump.

Kirkcudbright :—St. Mary's Isle ; Mr. Druce.

Selkirk :—Whinnie Brae ; Banks of the Tweed and of the
Ettrick, near Galashiels ; Mrs. Gregory, Miss Hayward.

Edinburgh :—Mr. McTaggart Cowan, junr.

Argyle :—Oban ; the Rev. C. Elsee.

Co. Clare :—Ballyvaghan ; Mr. Druce.

Co. Kerry :—Killarney ; Mrs. Jenner, Mr. Druce.

Jersey :—St. Anne's ; Mr. Druce.

var. *pseudo-mirabilis*.

V. pseudo-mirabilis, Coste in Bull. Soc. Bot. France, xl.
p. cxv (1893).

V. spuria, Čelakovský, Prodr. Fl. Böhm. 478 (1875).

V. sylvestri-mirabilis, Bogenhard, Taschenb. Fl. Jena 163
(1850).

V. mirabili × *silvatica*, Rap. in Bull. Soc. Vaud. Sc. Nat. xi.
354 (1873).

V. mirabilis × *Riviniiana*, Uechtritz in Verh. bot. Ver.
Brandenburg ix. 118 (1867).

V. Uechtritziana, Borbás in Koch. Syn. Deutsch. u. Schweizer
Fl. ed. 3, i. 197 (1890).

BRITISH VIOLETS

V. silvatica var. *pseudo-mirabilis*, Ascherson and Graebner in Fl. Nordost. Flachl. 500 (1899).

V. silvestris var. *pseudo-mirabilis* (first published as such by Rübel, in The New Phytologist, xi. 55 (1912)).

COSTE'S DESCRIPTION.

"*Viola pseudo-mirabilis* sp. nov.:—Plante de 1—3 décimètres d'un beau vert, entièrement glabre excepté sur les crénelures brièvement ciliées des feuilles; souche épaisse oblique longue multicaule; tige dressée, feuillée trigone glabre sur tous les angles; feuilles, quelques-unes reniformes obtuses la plupart largement ovales, brièvement mais nettement acuminées à crénelures bien marquées les radicales longuement, les supérieures brièvement, mais distinctement petiolées; stipules larges ovales-lancéolées frangées: fleurs grandes, d'un bleu vif, inodores, toutes fertiles munies de pétales et insérées au sommet de la tige entre deux feuilles opposées; sépales largement lancéolées très aigus; pétales larges entiers ou légèrement érodés, les deux latéraux barbus à la base, l'inférieur prolongé en éperon très gros, dépassant longuement les appendices calicinaux; capsule oblongue-trigone acuminée glabre, longuement pedunculée. . . . Cette plante n'est pas une hybride et ne peut-être rapprochée que du *V. mirabilis* L. dont elle a peu le port. Mais celui-ci s'en éloigne: 1^o par sa tige munie sur l'un des angles d'une ligne de poils; 2^o par ses feuilles adultes plus larges, plus arrondies, obtuses ou à peine acuminées, superficiellement crénelées, les supérieures, subsessiles; 3^o par ses stipules entières, brièvement ciliées, non frangées; 4^o par ses fleurs d'un bleu pâle, odorantes, les premières steriles et portées sur des pédoncules radicaux, les caulinares fertiles et souvent apétales; 5^o par sa capsule brièvement pédunculée."—Coste, l. c.

From the synonymy given one gathers that this plant has been regarded as a hybrid between *V. mirabilis* and *V. silvatica* (agg.) Its appearance justifies the conclusion. The

VIOLA RIVINIANA

position of the upper leaves on the main stem is almost precisely that of the later stage of *V. mirabilis*; the shape of the leaves themselves is that of *V. Riviniana*—also in the cleistogamous state. But this assertion of hybridity is contradicted by Coste in very plain terms when he states:—“Cette plante n'est pas une hybride.”

Ascherson and Graebner make the plant a variety of *V. silvatica*, equalling in rank vars. *Riviniana* and *arenaria*. This is a far more natural arrangement and fits the fact that without having *V. mirabilis* in Great Britain and Ireland we yet have *pseudo-mirabilis*.

The first specimen I saw was one from Mr. Hiern's collection. The accompanying label showed that it had grown under abnormal conditions—“by the side of a stream.” Whilst recognising its likeness to *V. mirabilis*, I pronounced it (mentally) *V. Riviniana*, var. nov. The second specimen that came under my notice was from the herbarium of the late Mr. Thos. Clark (kindly lent me by Mr. H. S. Thompson). This plant had been taken from a Somerset hedge-row—not an unlikely habitat for *V. Riviniana*—and abnormal conditions were therefore outside the mark. Moreover, by this time Mr. Druce had informed me that Dr. Graebner had discovered his var. *pseudo-mirabilis* of *V. silvatica* at Killarney, a fact which opened my mind to possibilities.

I think the only point of difference between the plants I have seen and Coste's description is a short pubescence on the upper surface of the leaves. Coste mentions a ciliation of the leaf-margin which is to be seen in Mr. Clark's example from Somerset.

A life-history of the plant is needed, as well as an extended search for it in other possible habitats.

Very rare, or perhaps overlooked on account of its evident affinity with *V. Riviniana*, under which I have placed it as a variety.

BRITISH VIOLETS

Devon, S.:—Cornwood; Mr. R. P. Gregory.

Devon, N.:—Surinbridge parish; Mr. Hiern.

Somerset, S.:—Roadside, between Crewkerne and Beaminster;
(Herb. Thos. Clark, 1850).

Co. Kerry:—Killarney; Dr. Graebner (on the Phytogeographical Tour, 1911), who named it *V. sylvatica* Fries, var. *pseudo-mirabilis* Ascherson and Graebner.

forma nemorosa.

V. Riviniana Reichb., forma *nemorosa*, Neuman, Sveriges Fl. Ex. 10 (1896).

V. sylvatica Fries, var. *intermedia*, Le Grand, Stat. Bot. Forez, 82 (1873).

V. vicina, Martrin-Donos, Fl. Tarn, 80 (1864).

This plant is summed up by Dr. Neuman in his Sveriges Flora (Ex. 10) in these terms:—"är mera lågvuxen, har hälften kortare foderbihang, och violett sporre."



Of var. *intermedia* Le Grand (= *V. vicina* Martr.-Don.) Rouy et Foucaud write:—"Éperon un peu plus coloré; capsules moins aiguës; plante plus robuste à feuilles supérieures plus allongées. Variété analogue à la var. *lucorum* du *V. canina*." (Fl. de Fr. iii. 14.) Size, therefore, is the character which separates var. *intermedia* Le Grand from f. *nemorosa* Neuman; a character which is apparently ignored by many Continental botanists, who put up examples of var. *intermedia* Le Grand, measuring 5-8 cm., whereas the var. *lucorum* of *V. canina* (said to be analogous to var. *intermedia* of Riv.), should measure 25-40 cm. A coloured spur (which, like that of *V. Riviniana* (type), is inflated) is the test character which both possess; a trivial distinction at best, for occasionally the spurs are variously tinted on the same plant.



V. RIVINIANA, F. NEMOROSA, NEUMAN.

BRITISH VIOLETS

The shorter calycine appendages (half way between those of *V. silvestris* and those of *V. Riviniana*) mark a very elegant little plant, which accords with Neuman's type, f. *nemorosa*. Good examples of this come to me from time to time, gathered at Killarney by Mrs. Jenner.

A note appended to a sheet of *V. nemorosa*, in the Neuman, Wahlstedt and Murbeck set, in the National Herbarium, and at Kew, reads thus:—“Appendicibus sepalorum plerumque brevioribus petalis paullo angustioribus violaceis prope basin macula obscuriore instructis, calcari violaceo. His notis ad *V. silvestrem* accedit, tamen floribus majoribus, appendicibus calycis conspicuis, calcari brevi, &c. bene distincta. Caveas autem ne cum formis hybridis, a *V. sylvestri* et *V. Rivin.*, a typica ortis confundas.” Leg. S. S. Murbeck.

P. V.

Later flowering than *V. Riviniana*, which is later than *V. silvestris*.

Somerset:—Bath; Miss Peck. Weston-s.-Mare; Clevedon;
Tickenham and many other localities in the county;
E. S. G.

Hants.:—New Forest; Miss G. Borton Brown.

Sussex:—Lindfield; Mr. Standen.

Oxford:—Stanton St. John; Mr. Druce.

Herts.:—Knebworth; E. S. G.

Co. Kerry:—Innisfallen Island; Killarney; Mrs. Jenner.

Co. Tyrone:—Clogher; Miss Peck.

Guernsey:—Petit Bo; Mr. Druce.

(The robust habit of the Guernsey plants accords better with descriptions of var. *intermedia* Le Grand than with the description of forma *nemorosa*, Neuman. B. E. C. Report, ii. 543).

forma villosa.

V. Riviniana Reichb., f. *villosa*, Neuman, Sveriges Fl. 273 (1901).

VIOLA RIVINIANA

A violet found, among mining débris, at Winterhead, Somerset, in 1896, was identified by the late Mr. W. H. Beeby, as the forma *villosa* of *V. Riviniana* Reichb. (Neuman, Wahlstedt and Murbeck, Ex. 13).

It differed from the type in having

- (a) reddish flowers.
- (b) hairs on stem, petiole, peduncle, and both leaf-surfaces.
- (c) smaller and darker spur.
- (d) toothed bracts.

Transplantation of a similarly hairy plant from the outskirts of Weston Woods to a shady spot in my garden effected considerable modification in the degree of hairiness. From this fact I derived the impression that *V. Riviniana* forma *villosa* is a *state* only, due to soil and situation.

The darker spur points to the forma *nemorosa*, Neuman.

A plant found by the late Rev. A. Ley in marshy ground at Great Doward, Hereford, in 1908, which retains its excessive hairiness under cultivation, appears to have claims to hybridity; these, however, remain to be tested. This violet was first published under the name of *V. hirta* × *silvestris*. (A. Ley, in B. E. C. Report, ii. 360.) The Rev. E. S. Marshall and the late Rev. A. Ley agreed with me later that the calycine appendages suggested *V. Riviniana* rather than *V. silvestris*. A description of this plant is appended:—

REV. A. LEY'S VIOLET.

HABIT:—central rosette barren with four lateral flowering branches, on which are secondary shoots also flowering: many old brown cleistogamous stems as in *V. Riviniana* and *V. silvestris*.

HEIGHT:—about 16 cm.

STEM:—hairy throughout.

BRITISH VIOLETS

STIPULES :—(of central rosette) 11-15 × 1-2 mm. at broadest part; green or lightly tinged with purple; toothed but not to the apex, which ends in a long entire point; lightly hairy all over and ciliate with spreading hairs; (of flowering branches) glabrescent, 12-16 × 2-3 mm., entire or somewhat toothed at base, or toothed on one side only; teeth 1-4 mm.

LEAVES :—(spring) long, rather narrow, some rounded at apex, others acute, hairy above and below, hairs spreading, sinus at length open, but lobes, as a rule, overlapping; summer leaves elongating, base truncate or sub-cordate.

FLOWERS :—without scent, rather varied in shape, deep lilac with a reddish tinge: upper petals long (15 mm.); lateral *petals* bearded, also long (14 mm.); lower petal 13 mm., narrow, emarginate with dark purple branching veins; bosses on the wings of lower petals; *bracts*, purplish, long (6 mm.), narrow (a glandular tooth at base), near the curvature; *sepals* broad at base (with appendages of *V. Riviniana*) and with long drawn out points, narrow above, 9 mm. in length; *spur* paler than corolla, inflated, blunt, furrowed (6 mm.); *anther-spurs* (5 mm.) falcate, 1 mm. longer than anther with its apical scale.

CAPSULE :—(immature) roundish in cross section, angled later; (mature) glabrescent to glabrous, bluntly trigonous.

In regard to the position to which this plant should be assigned, a difficulty arises from the fact that there is no proof of the existence of hybrids between the two groups, Acaules and Caulescentes, of the *Nominium* section of the genus. Some experiments in the artificial crossing of various representatives of these groups, undertaken by my son, Mr. R. P. Gregory, during the summer of 1910, gave negative results. It should be remarked, however, that Violets are not easy to manipulate, and until a further test has been made it is necessary to reserve judgment.

VIOLA RIVINIANA

Whether the plant eventually prove to be a hybrid or not, it is most interesting, since, more than any other British Violet hitherto recorded, it combines in itself certain characters which appertain respectively to *V. hirta* and to *V. Riviniana*. With the former it agrees in the hairiness of the whole surface of the plant and in the shape of the early leaves, which are narrower and more pointed than those of *V. Riviniana*. In other characters, however, it closely approaches *V. Riviniana*; first (and chiefly) in its caulescent habit; secondly, in its broad, lobed calycine appendages and long, pointed sepals. The leaves of the cleistogamous branches are variable, some having truncated bases, others resembling the corresponding leaves of *V. Riviniana*.

Apart from the general hairiness of the plant and its narrower, more pointed leaves, there is little or nothing to separate it—in the dried state—from the forma *villosa* of *V. Riviniana*. In the fresh state, from which the description given above was carefully compiled, one's convictions are somewhat shaken, and one may be tempted to assign to it a position intermediate between *V. hirta* and *V. Riviniana*, regarding it as a putative hybrid between those two species; but in the absence of any evidence that such hybrids exist, I include it here under the forma *villosa* of *V. Riviniana*.

It would be interesting to raise seedlings (if the seed prove fertile) and mark possible deviations from the caulescent state, such as appertain to the continental *V. mirabilis* Linn. This species, in the early stage, is an apparently acaulescent violet, which produces sweetly scented flowers. Later in the season it throws out branches, bearing leaves with cleistogamous flowers in their axils. On capsules formed from these flowers the plant appears to rely for propagation by seed.¹

¹ Mr. Hunnybun has recently raised seedlings of this plant. The seedlings—so far—are all alike and true to the parental type.

BRITISH VIOLETS

forma luxurians. Mr. Bickham's White Violet.

V. Riviniana, f. *luxurians* Becker, ined.

STEM:—rounded, with one flat side (which is winged) deeply tinged with purple.

STIPULES:—(lower) green, $11-12 \times 3$ mm., broadly fringed almost to the apex, teeth $1\frac{1}{2}$ -3 mm. long, mostly straight at tip.

LEAVES:—(upper) ovate-cordate, apex acute, sinus open, margin crenate-serrate; petiole deeply grooved, lamina purplish beneath.

FLOWERS:—white; *bracts* opposite, toothed at base, purplish; upper *petals* broad, spreading; lateral petals scantily bearded, *longer* than the lower one, which is broad and rounded at the apex (15×7 mm.); *calyx* with broad, square, prominent appendages; *sepals* awl-shaped at apex, lower pair 7×2 mm. at broadest part; *spur* thick, straight, greenish-yellow, deeply furrowed, 9 mm. in length; *anther-spurs* straight, slightly recurved at tip, broad at base, 1 mm. longer than anther with its apical scale, which is rounded.

CAPSULE:—glabrous, with long style and beaked stigma; ripe fruit with more accrescent calycine appendages than those of *V. silvestris*.

P. III.—IV.

Many characters suggest *V. Riviniana*; notably the broad, square, prominent calycine apps.; the thick straight spur, with anther-spurs long and straight.

This plant, which grows apparently wild in a shrubbery attached to Mr. Bickham's garden at Ledbury, was referred by Dr. Becker to the form *luxurians* of *silvestris*.

A thorough examination of the violet, in a fresh condition, convinced me of its nearer affinity with *V. Riviniana* than with *V. silvestris*. For this reason, I have supplied a full

VIOLA RIVINIANA

description. Dr. Becker saw the plant only after it had been dried and mounted.

forma minor.¹

V. flavicornis Forster, non Smith.

V. Riviniana, f. *minor* Murbeck, ined.

Much confusion has arisen from the name *flavicornis* having been applied to small forms both of *V. Riviniana* and *V. canina*; the former being the *flavicornis* of Forster; the latter, the *flavicornis* of Smith.

In our public herbaria the two forms are inextricably mixed, and it is recorded on the authority of Professor Babington (*Phytologist* iii.,² 1850), that "the late Mr. Forster mistook for (or perhaps more strictly mingled and confused with)" his own, the *V. flavicornis* of Smith.

V. Riviniana forma *minor* is a small plant with tiny (often dark-coloured) leaves and few large flowers (usually one or two flowers only to a full-grown plant). The colour of the petals varies from the slaty-blue of the type to a pale bluish-gray, both often having streaks or splashes of white. The spur is sometimes pale—as in the type—sometimes yellowish.

The plant remains dwarf after the flowering season is over, and when growing in shade, sends forth miniature cleistogamous branches, bearing tiny capsules. On sunny slopes of Mendip, the plant is dotted about here and there, seldom or never forming large patches, but appearing rather as detached plants.

Seeds are ripened, in sunshine, from capsules of the early open flowers, and it is not always easy to find cleistogamous branches. In September 1910 I searched diligently (though

¹ This name was given by Dr. Murbeck to specimens in my collection.

² P. 939; but this is only in Neuman's notice of Babington's paper in Henfrey's *Bot. Gaz.* ii. 141 (1850).



V. RIVINIANA, REICHB. F. MINOR, MURBECK.
 (2 shows capsule from early, open fls.; 3 cleistogamous branches.)
 (No. 1069 and 1519 Herb. Gregory.)

VIOLA RIVINIANA

unsuccessfully) among plants on the southern side of Blackdown, near Cheddar, and was just on the point of relinquishing my quest, when the thought occurred to me that shade was necessary for their development.

Searching on the shady side of a gorse bush, I was almost immediately rewarded by finding a plant, on which cleistogamous branches—averaging about 10 cm. in length—were produced. These had at their extremities fertile fruits dehiscing among the short-petioled (almost sessile) leaves, whilst lower down on the stems many apetalous flowers were sterile. Exactly the same thing occurs in *V. Riviniana* type; one seldom finds fertile capsules, except near the apex of a cleistogamous branch.

This forma *minor* presents a considerable contrast to the var. *diversa* of *Riviniana*. In the early stage both are small, and inappreciably caulescent; f. *minor* has few, large flowers; var. *diversa* is remarkably floriferous, but the flowers are tiny, of many shades of colour, with (usually) greenish spurs. Forma *minor* remains dwarf throughout its lifetime, while var. *diversa* generally becomes almost as large as *V. Riviniana*, type.

P. Flowers with the type, and again in autumn.

Devon, S.:—St. Mary Church; Miss Peck.

Somerset, N.:—Blackdown on Mendip; near Bath; Clevedon;
E. S. G.

Oxford:—Wychwood; Mr. Druce.

Cumberland:—Scawfell; Mr. R. P. Gregory. (This plant has the “duvet très court” of *V. rupestris*, var. *arenaria*, and the capsule immediately after dehiscence is hairy, becoming glabrous later.)

Edinburgh:—Amiston; Mr. McTaggart Cowan.

Co. Kerry:—Killarney; Mrs. Jenner.

Co. Tyrone:—Clogher; Miss Peck.

BRITISH VIOLETS

V. *canina* × *silvatica* (agg.)

Mrs. Jenner's White Dog Violet.

Stem rounded, with one flat side (which is winged) deeply tinged with purple; lower *stipules* purplish (10 × 2 mm.) fringed with 1-2 mm. teeth almost to the apex; upper *stem-leaves* ovate-cordate, apex acute, sinus closed, margin crenate; petiole grooved, bracts slender, scarcely toothed lamina purplish beneath: *flowers* white¹; *calyx* with narrow rounded and inconspicuous appendages; *sepals* somewhat falcate at apex; *petals* spreading: lateral bearded shorter than lower one; upper narrow, recurved; lower narrow (15 × 6 mm.) emarginate; *spur* slender, curved, yellowish, slightly furrowed, 6 mm. in length; *anther-spurs* slender, falcate, 1 mm. longer than anther with its apical scale which is somewhat acute; *capsule* glabrous, with short style, and cup-like stigma fringed with hairs.

P. IV.—V.

Co. Kerry:—Innisfallen Island; Mrs. Jenner, Apr. 18, 1907.

This violet, which at first I identified as *V. canina* forma *candida*, was placed by Dr. Becker (to whom I sent dried specimens), under *V. Riviniana*. At the time of writing my description I had not seen the capsule in dehiscence. Its appearance at this stage resembles that of the group *Silvaticae* without the accrescent calycine appendages characteristic of *V. Riviniana*. As there exist traces of *V. canina* which cannot be ignored, I place it as an intermediate between the *Silvaticae* and *Caninae* groups.

¹ In my study of the genus *Viola* I have often met with intermediates, or plants not true to the specific type, which bear white flowers. In this connexion the following quotation from Kerner and Oliver ("Natural History of Plants," ii. 576 (1904)) may be cited:—"Reference must also be made to the comparative frequency with which hybrids bearing white flowers spring from species with blue, violet, red, or yellow blossoms, whose non-hybrid off-spring only produce colourless flowers on very rare occasions."

VIOLA RIVINIANA

Mr. Hunnybun has this violet and Mr. Bickham's white form in his garden, and states that they become very similar under cultivation.

A plant found in Banwell Wood, Somerset, in April 1904 (of which I wrote the following note), was identified for me by the late Mr. Beeby as *V. ericetorum* \times *silvatica* (agg.). "Perfectly white flowers with a thick greenish-yellow spur. Has much the habit of *V. Riviniana*, but the central rosette has one flower."

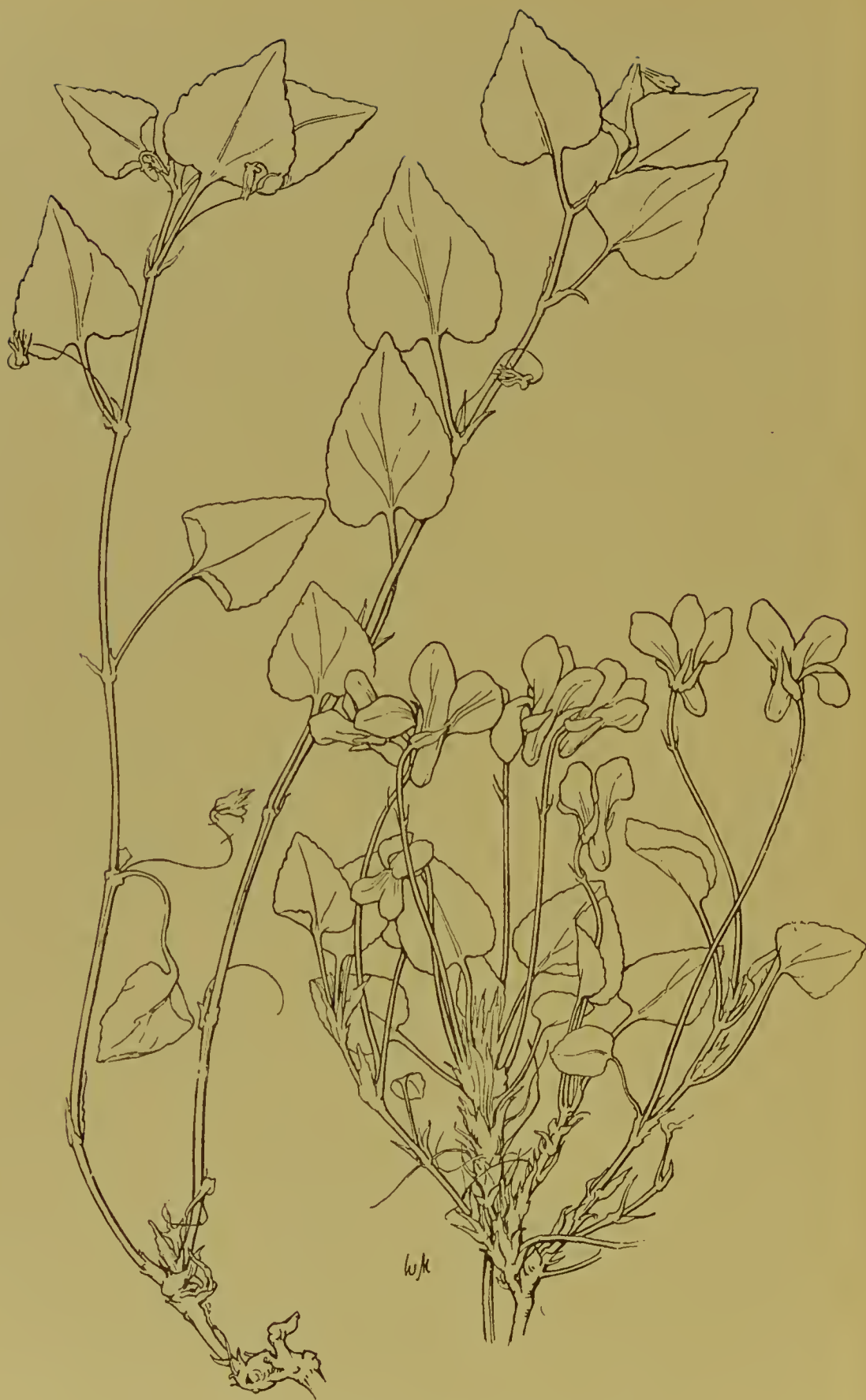
V. canina \times *Riviniana*.

Much has been written concerning the infertility of hybrids, which was too often assumed to be the rule. In many cases the assumption has been shown to be without sufficient justification, but it does seem to hold good for the hybrids of *V. canina* \times *V. Riviniana*, which, so far as my experience goes, are quite sterile.

A plant which I cultivated for over eight years (vouched for as the hybrid *V. canina* \times *Riviniana* by the late Mr. Beeby and since confirmed by Dr. Becker) bore no fruit. The erect cleistogamous branches (averaging 10-17 cm. in height), produced an abundance of apetalous flowers each year, not one of which—so far as I know—ever bore a capsule. Nor did the early open flowers bear fruit.

The cultivated plant, in bloom on a bank facing south, was a picture of beauty, forming a perfect cushion of mauve coloured flowers with bright yellow spurs. As a rule, violets removed from their native habitat to a sunny garden tend to become increasingly floriferous and less robust in habit. The blossoms too are prone to take on a paler hue.

Another violet from the lower slopes of Worle Hill, Weston-super-Mare, which I had referred to *V. canina* var. *ericetorum*, was returned from Dr. Becker labelled *Viola canina* \times *Riviniana*. Since both the supposed parents flourish within reasonable distance, and the wide-awake appearance of the flowers



V. CANINA \times RIVINIANA.

(Nos. 968 and 1075 Herb. Gregory.)

VIOLA RUPESTRIS

and a tendency to be pointed on the part of the leaves suggests affinity with *V. Riviniana*, I can but concur with the identification. The balance of evidence, however, is on the side of *V. canina*, the flowers being of *canina-blue* with unmistakably *yellow spurs*. (No. 696 Herb. Gregory.)

Many other more or less striking intermediates between *V. Riviniana* Reichb. and *V. canina* L. occur frequently where both species flourish.

The localities from which the hybrid *V. canina* × *Riviniana* is reported are :—

Cornwall, W.:—East Pentire; Dr. C. C. Vigurs (teste Becker).

Somerset:—Bath; Miss C. L. Peck. Worle Hill, Weston-super-Mare; E. S. G.

Kent:—Penshurst; Miss V. King.

Herts.:—Knebworth; E. S. G.

Worcester:—Malvern Link; Mr. Bickham (teste Becker).

Viola rupestris Schmidt.

V. RUPESTRIS. Schmidt, in Neuere Abhandl. Boehm. Ges. i. 60 (1791); Bab., Man. ed. 9, 45 (1904).

V. arenaria DC., Fl. Fr. iv. 806 (1805); Reichb., Ic. Fl. Germ. et Helv. iii. f. 4500 (1839), Ic. Pl. Crit. i. 58, t. 72 (1823); Fries, Mantissa iii. 121 (1842); Grenier et Godron, Fl. Fr. i. 178 (1847); Bab. in Journ. Bot. i. 325 (1863); Syme, Eng. Bot. ii. 235 (1864); Hooker f., Student's Fl. ed. 3, 49 (1884); Neuman, Sveriges Fl. Ex. xii. (1901).

V. Allioni, Pio, De Viola 20, t. i., f. 2 (1813).

V. rupestris, Schmidt in Neuere Abh. Boehm. Ges. i. 60 (1791):—"Radix perennans, subfusiformis, stricta, crassa, lignosa, cicatricibus geniculata, extus sordide pallens, intus

BRITISH VIOLETS

alba. Caulis modo repens, aut procumbens, modo erectus, angularis. Folia radicalia



Lower leaf of
V. rupestris.

Upper leaf of
V. rupestris.

plura, reniformia obtusa, leviter crenata, nitida, lucide viridia, subtus ex albo virentia venosa glabra, petiolis longis glabris tenuibus sulcatis innixa. Stipulae lanceolatae dentatae exsiccatae plerumque fuscae. Folia caulina reniformi cordata

tamen etiam obtusa, subintegra glabra lucide viridia, subtus venosa petiolata, stipulis glabris, acute dentatis ex albo-virentibus gaudent. Flos caeruleus, nutans, parum odoratus. Pedunculus axillaris, supra-foliaceus, erectus, nutans, longus triqueter attenuatus glaber uniflorus setis duabus parvis, lanceolatis instructus, supremorum florem brevissimus. Germen ovatum glabrum, lectum, staminibus elevat stylum tenuem subulatum. Fructus ovatus unilocularis, trivalvis."

V. arenaria DC. Fl. Fr. iv. 806 (1805):—"Sa racine qui est brunâtre et écailleuse au collet, émet 2 ou 3 tiges simples, longues de 3—4 cm., légèrement pubescentes, étalées; les feuilles sont alternes, pétiolées arrondies, échancrées en cœur à leur base, légèrement crenelées presque glabres; les stipules sont lanceolées aiguës, dentées: les pédoncules sont axillaires, 3 ou 4 fois plus longs que les feuilles terminés par une fleur penchées, d'un bleu pâle ou blanchâtre; l'éperon est épais et obtus; les bractées sont linéaires, aiguës longues de 8—10 mm. placées sur le pédoncule à 2 cm. au-dessous de la fleur."

V. arenaria Grenier et Godr., Fl. Fr. i. 178 (1847):—"Fleurs inodores, sépales aigus. Pétales entiers les 2 latéraux fortement barbus; l'inférieur à éperon obtus, 3 fois plus long que les appendices du calice. Capsule

VIOLA RUPESTRIS

pubérulente - tomentense, subaiguë. Feuilles ovales cordiformes, obtuses; les inférieures réniformes en cœur; stipules *ovales-oblongues* acuminées, frangées dentées. Tiges courbées à la base dressées. *Plante toute couverte d'un duvet très court.* Fleurs bleues."

V. arenaria Neuman in Sveriges Fl. Ex. xii.:—"Stjälkar tufvade vid blomningen 3—6 cm. med korta sedan något förlängda stamled utan kronlösa blommor; blad svagt naggsågade, kortskaftade rundade-njurlika utan spets eller bredt hjärtlika med kort tvär spets 7-15 mm. långa och breda; mellersta stipler gröna 5-6 × 3-4 mm. med 2-4 grofva sågtänder på hvar sida de nedre liksom de öfre i sommarstadiet längre och smalare; blommor talrika på långa skaft, bildande en tät kvast, öfverskjutande bladen; foderbihang korta och smala; krona blått eller rött violett; sporrblad djupt urnupet 8-15 mm. inberäknadt den violetta, trubbiga 2 mm. långa sporen; fröhus 5—7 mm. finludet."

var. *arenaria*.

Teesdale Violet.

V. rupestris, var. *arenaria* (DC. pro sp. 1805) Beck, Fl. Nied.-Öst., 519 (1890). For further synonymy see under *V. rupestris*, above.

HABIT:—a tufted insignificant plant; when in bloom 2-4 cm., having then the appearance of an acaulescent violet with short—afterwards elongating—stalks.

ROOTSTOCK:—thick, woody, brown, clothed with bases of former leafage.

STIPULES:—(lower) small, narrow (3-6 × 1 mm.), almost entire; (upper) longer and broader (4-8 × 1-3 mm.), all hairy.

BRITISH VIOLETS

LEAVES :—short-petioled, rounded, reniform, without points or broadly cordate with short points ($5-10 \times 4-12$ mm.), thick, punctate, almost entire.



Lower leaf of
var. *arenaria*.



Upper leaf of
var. *arenaria*.

FLOWERS :—large in proportion to the size of the plant, blue ; anterior petal long and narrow, often emarginate, apiculate ; *spur* short, thick, furrowed ; calyx lobes scarcely acute ; *bracts* slender, entire, on, or immediately below, the curvature of the peduncle ; *anther-spurs* very slender, falcate, about as long as the anther with its bluntish apical scale.

CAPSULE :—downy, 6 mm. long in dehiscence.

The whole plant (petals excepted) clothed with a felt of short hairs which tend to disappear from the summer leaves.

P. V. Rare.

Nos. 1126 and 1126 *a* and *b*. Herb. Gregory.

The Teesdale plant was discovered by the Messrs. Backhouse, who observed it for several years, and in 1861 the younger of these gentlemen first noticed it in flower and transplanted roots of it to his garden at Acomb, near York.

It produces perfect flowers for a short time in May : seeds are afterwards ripened from capsules of apetalous flowers. A full and very interesting sheet of the Teesdale violet is to be seen in the Cambridge Herbarium, collected by the Messrs. Backhouse in 1862 and 1865, and labelled "*Viola Riviniana*, small form." This name has been crossed through and the name "*V. arenaria* DC." substituted. The habitat is recorded by Mr. Jas. Backhouse, junr., thus :—"On the sugar limestone, Teesdale ; on the Durham side, near Cauldron Snout Bridge." To this information is appended a note :—"Mr. Backhouse suspects it to be *V. arenaria*."

VIOLA RUPESTRIS

The name *V. rupestris* Schmidt considerably antedates that of *V. arenaria* De Candolle, and for that reason must be affixed to our plant. Neither of the original descriptions, however, quite fits it. The description of *V. arenaria* DC., given by Grenier et Godron, covers our representative British variety more fully. "Plante toute couverte d'un duvet très court" is especially applicable. Dr. Neuman also very accurately describes the plant which, with us, figures successively as *V. arenaria* DC. and *V. rupestris* Schmidt.

The Teesdale plant, discovered by Backhouse, should be regarded—I think—as one variety of a series of varieties and forms which are abundant on the Continent. Dr. Neuman has seven hybrids under the species *V. arenaria*, of which he makes *V. rupestris* Schmidt a glabrous variety. Dr. Becker (*Violenstudien*, 291) makes *V. rupestris* Schmidt a Spec. Coll. with three varieties, of which var. *A. arenaria* is described as "Tota planta pubescens." Ascherson and Graebner (*Fl. Nordst. Flachl.* 500) refer to the close connection between *V. silvatica* (agg.) and *V. rupestris*. The same conclusion arrived at by other authors is shown by such synonyms as *V. silvestris* sub-sp. *arenaria* (Rouy et Fouc., *Fl. de Fr.* iii. 15).

Viola Riviniana forma *minor* Murbeck is very near *Viola rupestris* Schmidt, var. *arenaria*. A series of plants from Scawfell shows the "duvet très court" and differs from the ordinary Teesdale variety only in the shape of some of the upper leaves. These—instead of being rounded at the apex—run out into abrupt points, like those of *V. Riviniana*. I can show in my own herbarium a very convincing gradation between *Viola Riviniana* f. *minor* Murb. and *Viola rupestris* Schmidt.

There can be little doubt that several forms of *V. rupestris* are awaiting discovery in Britain. Quite lately (1912) scraps of dried violets from Teesdale have come under my notice in the collections of Mr. Druce and Mr. H. S. Thompson. Mr.

BRITISH VIOLETS

Druce's fragment appears to be identical with the true *V. rupestris* of Schmidt, whilst that of Mr. Thompson (from the herbarium of the late Mr. Thos. Clark) agrees with the var. *glabrescens* of Neuman. A still more glabrous plant is the var. *glaberrima* Murb. of *V. rupestris* Schmidt. This is described in Bot. Not., p. 186 (1887) as "Planta omnibus partibus nitido glaberrima." I very much doubt whether this plant is really distinct from *V. Riviniana*, f. *minor*.

Viola canina Linn.¹

Dog Violet.

V. CANINA. L., Species Plantarum 935 (1753), and in Hayne, Arznei. iii. t. 3 (1813); Reichb., Ic. Pl. Crit., 59, t. 74 ff. 150-153 (1823); Ic. Fl. Germ. et Helv. iii. f. 4501 (1839); Syme, Eng. Bot. ii. 21, t. 175 (1864); Rouy et Foucaud, Fl. de Fr. iii. 5 (1896); Bab., Man. ed. 9. 45 (1904); Becker, Violentstudien, 300.

HABIT:—slender, ascending, branched; flower branches many, axillary, *not from a flowerless rosette of leaves*.²

HEIGHT:—5-40 cm. (the full measurement is attained only in the cleistogamous stage).

ROOTSTOCK:—slender, herbaceous, or somewhat woody below (less so than that of *V. silvatica* (agg.)).

STEMS:—Many; all producing flowers from the axils of leaves, unlike the *silvatica* group, of which typical plants have a central rosette of leaves only.

¹ Mr. A. J. Wilmott (Journ. Bot. xlix. 289-293 (1911)) has shown that, in strict accordance with the rules of synonymy, the name *V. canina* Linn. "should be used for the plant which has since 1823 been called *V. Riviniana* . . ." I propose, however, to follow the arrangement adopted in the London Catalogue of British Plants, ed. 10, and in Babington's Manual of British Botany, ed. 9, revised by H. and J. Groves. Accordingly, I adhere to the traditional use of the name as applying to the Dog Violet.

² In the late Mr. Thos. Clark's collection, one plant of *V. canina* has a sobole.

VIOLA CANINA

STIPULES:—lanceolate, *scarcely acuminate*, with about 2-4 coarsely serrate teeth, sometimes entire; lowest, brown; those above becoming gradually greener until the fruiting stage, when all are of a reddish-brown colour; lower, 5×2 mm., upper, often $8-10 \times 1-2$ mm., much shorter than the petioles they subtend.



Stipules taken from the same specimen.

LEAVES:—petioles often shorter than the blades; dark green, firm, somewhat *longer than broad*, from truncate to open cordate base, oval or oblong, elongated, blunt, *not acuminate* nor pointed, bluntly crenate-serrate, with scattered *short* hairs on the upper surface, especially on the basal lobes; these hairs usually shorter than those found on the upper surface of the leaves of *V. Riviniana*.

FLOWERS:—scentless, blue, with white eye (not lilac, nor violet; the pure blue of *V. canina* is essentially different from the lilac of *V. silvestris* and from the slaty blue of *V. Riviniana*); *sepals* lanceolate, not longly acuminate, appendages rounder and shorter than those of *Riviniana*, *not accrescent in fruit*; *petals* longer than broad, folding inward, anterior petals (7-18 mm.) much longer and narrower than those of *V. Riviniana*. *Spur* yellow, short (2-4 mm.), thick, curved, about twice the length of calycine appendages, seldom notched or furrowed at the apex. *Anther-spurs* short, thick, much more falcate than those of *V. Riviniana*, broader at the junction with the anther and somewhat tapering; about the same length as, or shorter than, the anther with its apical scale.

CAPSULE:—glabrous, from roundish to oval-oblong, *truncate*, apiculate, 6-10 mm. in length, *bluntly* three-sided.

The general appearance of this plant, in its flowering state, resembles that of an acaulescent violet; later it lengthens out, and in the cleistogamous stage has branches possibly more than 40 cm. in length, whose leaves—although more pointed

BRITISH VIOLETS

than in the earlier state—remain narrower, and of more equal breadth, throughout, than those of the *silvatica* group.

P. V., Local.

Cornwall:—East Pentire; Dr. C. C. Vigurs.

Somerset:—Sand hills, Weston-s.-Mare; Burnham and Berrow. (This robust plant, with large flowers, is probably the var. *macrantha* of Grenier et Godr., Fl. Fr. i. 180.)

Herts.:—Near Knebworth; E. S. G.

Norfolk:—Marsh dunes, on the coast; Miss Pallis.

Co. Kerry:—Innisfallen Island; Mrs. Jenner.

Co. Tyrone:—Clogher; Miss Peck.

var. *ericetorum*. Heath and Hill Dog Violet.

V. canina L. var. *ericetorum*, Reichb. in Ic. Pl. Crit. i. 60, t. 74 f. 153 (1823).

V. canina L. β *brevifolia* Neilr., Fl. N.-Oesterr., 773 (1859).

V. flavicornis Sm. (in part), Eng. Fl. i, 304 (1824).

V. ericetorum [Schröd. ined.] Hayne Arznei., in Indices vol. iii, iv, pagina aversa.

Exsicc.:—Billot, No. 221; F. Schultz, Herb. Norm., No. 222.

HABIT:—a lowly, floriferous plant (5-15 cm.); our hill and heath var. of *V. canina*.

STEMS:—many, prostrate or ascending.

STIPULES:—averaging 3-5 mm. lanceolate (*not acuminate*), fringed sparsely with *rather long*, glandular and eglandular teeth; stipules much shorter than the petioles they subtend.

LEAVES:—on long petioles, blades small, often twice as long as broad (9 × 8 mm. to 2 × 1 cm.) oval, blunt, or bluntly pointed, scarcely winged, truncate, or broadly cordate, firm in texture.

11 Dog Violet.

XIII, X:



V. CANINA VAR. CALCAREA.

(No. 161 Herb. Gregory.)

VIOLA CANINA

FLOWERS:—large, in proportion to the leaves, clear azure blue,¹ with yellowish white throat; *peduncles* 5-6 cm. usually exceeding the leaves; lower *petal* long in proportion to the others (10-15 mm.) decreasing gradually toward the base; *spur* yellow, blunt, about twice the length of the calycine appendages, which are rounded and scarcely notched; *anther-spurs* short, thick, falcate, scarcely equalling anther with its apical scale.

CAPSULE:—glabrous, rounded, truncate-apiculate, becoming oblong-oval, elongating towards dehiscence.

Cleistogamous branches sometimes lengthen out to 40 cm.

Differs from type in its lowly habit and small leaves on long petioles.

A white form of var. *ericetorum* is found in a drove on the peat-moor near Glastonbury, and on a hill-side near Clevedon.

P. V.

Fairly plentiful on hill-sides and heath land.

Somerset, N.:—Near Bath; Miss Peck; Worle Hill, near Weston-s.-Mare; E. S. G.; Hill-side near Clevedon (f. *alba*); Miss Barstow.

Somerset, S.:—Peat moor, near Shapwick (f. *alba*).

Surrey:—Wimbledon Common; Miss Murray.

Herts.:—Knebworth; Miss Hayward.

var. *calcareea*.

V. canina L., var. *calcareea* Reichb., Ic. Pl. Crit., i. 60, t. 74 ff. 150-151 (1823); Kirschl., Fl. d'Alsace, i. 80 (1852).

V. rupestris Becker, Violenstudien 292 (1910).

EXSICC.:—Reichenbach, No. 2261.

HABIT:—A dwarf floriferous plant, 2-3 cm. in height, with large flowers of true *canina* blue, having yellow spurs.

¹ Exceptions occasionally occur. In a plant sent by Miss Murray from Sandling, Kent, the spurs were yellow, the petals pale lilac. (No. 1455 Herb. Gregory).

BRITISH VIOLETS

LEAVES:—from reniform to ovate-cordate, 5.9×4.8 mm., dark green, glabrous below, but with a few short hairs on the upper surface chiefly on the basal lobes; peduncles ($1.2\frac{1}{2}$ cm.) usually exceeding the leaves.

CAPSULE:—glabrous.

P. IV.-V.

Dry limestone hills, Weston-s.-Mare and Portland.

Differs from the type in its extremely dwarf habit, and from var. *ericetorum* in its persistent appearance of acaulescence. (No. 464 Herb. Gregory.)

This plant, found on Worle Hill and Blackdown, Somerset, agrees with Rouy et Foucaud's description (Fl. Fr. vol. iii., p. 7), and with Reichenbach's figure, No. 2261.¹

Dried specimens were sent to Dr. Wilhelm Becker in 1910, labelled as above. He returned them as *Viola rupestris* Schmidt. On this point, Seringe's note (Mélanges Botanique ii. 37) attached to a specimen sheet of *V. canina* β *minor* (= var. *calcarea* Reichb.) in Herb. Brit. Mus. may be of interest. "Cette variété ressemble beaucoup par la forme et la grandeur de ses feuilles à celles de la *V. arenaria*, mais les fleurs sont plus grandes que dans cette dernière espèce et l'éperon plus saillant, plus large et plus obtus. 'Elle en diffère surtout *par sa capsule glabre*. (Ging. MSS.)'"

Murbeck has a variety *glaberrima* of *V. rupestris* Schmidt, described as "Tota planta glaberrima." Even so, I think my Worle Hill plant should be placed under *V. canina*.

var. *pusilla*.

V. canina L., var. *pusilla*, Bab., Man. 34 (1843).

A variety *pusilla* of *V. canina*, described by Babington in his Manual (ed. i. p. 34) as having "leaves roundish-cordate,

¹ Sir J. E. Smith's Herbarium at the Linnean Society contains a sheet labelled *flavicornis* similar to my Worle Hill var. *calcarea*. In the Brit. Mus. and Kew Herbaria, *V. canina* var. *calcarea* is often represented by plants as large as var. *ericetorum*.

9 x 4.8 cm.
short hairs on
petioles

P. IV. V.
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V. CANINA VAR. *PUSILLA*.

(No. 1579 Herb. Gregory.)

VIOLA CANINA

rather acute, small; flowers large; base of the stem woody" has been sent to me for identification from "sandy turf near shore, Gullane, N.B." by Mr. McTaggart Cowan, and from Mildenhall, Suffolk, by Miss Ida Hayward. Good fruiting specimens from Mildenhall are to be seen in the Cambridge Herbarium (Babington's Collection).

The variation from type consists in a much-branched woody stem; flowers of a deeper, more *hirta*-like blue, intensified by contrast with the large yellowish eye and yellow spur. (No. 1490 Herb. Gregory.)

var. *sabulosa*.

V. canina L. var. *sabulosa*, Reichb., Ic. Pl. Crit., i. 60, t. 74 f. 152 (1823), and in Ic. Fl. Germ. et Helv. iii., f. 4501 a (1839); Kirschl., Fl. d'Alsace, i. 80 (1852).

V. flavicornis Smith, Eng. Fl. i. 304 (1824); Engl. Bot. t. 2736 (1832).

V. canina L. var. *rupestris*, Kirschl., Pl. Voségo-Rhén. i. 59 (1870).

Plants agreeing exactly with Rouy et Foucaud's description of the variety *sabulosa*, as well as with the figure depicted in Reichenbach's Ic. Fl. Germ. et Helv., were found in May 1911, on Codicote High Heath, near Hitchin, by Mr. J. E. Little.

The habit is caespitose, as is that of *V. canina* var. *calcareae*, which in some respects it resembles, but the root is more or less spindle-shaped¹ (corresponding noticeably with the figure quoted above) and the flowers are smaller and more numerous.

It would be interesting to observe the effect of removing plants from the limestone soil and bleak hill-side at Worle to the sandy habitat near Hitchin. If by this means change in the habit and in the size of the flowers were produced,

¹ "Souche pivotante."

BRITISH VIOLETS

one varietal name might cover both plants. (No. 1568 Herb. Gregory.)

In Mr. Hiern's collection there are plants of var. *sabulosa* from Dawlish Warren.

var. *lanceolata*.

Mr. Druce's Violet.

Viola canina L. var. *lanceolata*, Martini-Donos, Pl. Crit. Tarn, 13 (1862); Flor. du Tarn, 81 (1864).

V. guitteanae, Giraudias, Note, 3 (1895).

The variety *lanceolata*, which has not been previously recorded for this country, appears to be worthy of special notice. I have therefore thought proper to describe plants from two localities, which, though differing somewhat from one another, are in essential characters the same. Mr. Druce's plant from Oxford I received in the flowering stage only. Miss Pallis very kindly collected later specimens of the Norfolk violet showing cleistogamous branches.

HABIT :—ascending.

HEIGHT :—(above ground) $6\frac{1}{2}$ cm.

ROOTSTOCK :—herbaceous, not woody.

STIPULES :—(lower) brownish, ciliate with gland-tipped teeth, ovate - acuminate (5×2 mm.); (upper) green, oblong (12×2 mm.) entire on inner side, with 4 teeth only on outer side (these tipped with glands); decreasing in size upward, apex scarcely acute.

LEAVES :—(lower) small, rounded at apex, full green; (upper) blade rather longer than petiole ($2\frac{1}{2}$ cm.), lanceolate-subcordate, breadth $1\frac{1}{2}$ cm. at broadest part; margin with broad shallow crenatures, apex bluntish.

FLOWERS :—of true *canina* blue, whitish at the throat; *peduncles* long, overtopping the leaves; *bracts* almost entire, close to the curvature (5 mm.); *sepals* broad and lobed at the base, acute (*not acuminate*); *spur* yellow,



V. CANINA VAR. LANCEOLATA.
(Nos. 1490 and 1509 Herb. Gregory)

BRITISH VIOLETS

very little exceeding the calycine appendages, furrowed, notched; *petals* rounded, lower apiculate, upper recurved, lateral bearded, longer than the lower, having a downward droop. *Anther spurs*, short, curved.

(No. 1493 Herb. Gregory.)

P. V.—VI.

Oxford:—Marshy field near Menmarsh Farm; Mr. Druce, May 10, 1910.

Miss Pallis's Violet.

HABIT:—slender, ascending.

HEIGHT:—from 14-17 cm., *elongating in the flowering stage*.

ROOTSTOCK:—herbaceous.

STIPULES:—(lower) brown, scarious, sparsely fringed with glandular serrate teeth ($5.7 \times 1.1\frac{1}{2}$ mm.); (middle) green, herbaceous (5×2 mm.), glandular teeth short; (uppermost) green, longly acuminate with scattered glandular teeth.

LEAVES:—(lowest) quite small, roundish, soon disappearing; (middle) oval-cordiform, blades ($2.4\frac{1}{2}$ cm.) about equalling petiole; (uppermost) lanceolate, truncate at base, or only slightly cordiform ($1\frac{1}{2}$ -3 cm.).

FLOWERS:—large, of *caulina* blue on long peduncles (4-7 cm.); long slender bracts on, or immediately below, the curvature; *spur* yellow; calycine appendages rounded.

CAPSULE:—(of spring flowers) on long stalks (6-8 cm.), truncate, apiculate, elongating towards dehiscence.

Cleistogamous branches elongating (18-35 or 40 cm.); the leaves on the main stem are ovate-cordate ($2\frac{1}{2}$ - $4\frac{1}{2}$ cm.); those on the secondary stems smaller (*lamina* $1.2\frac{1}{2}$ cm.) on short petioles; *capsules*—clustered on short stalks at the extremity of branches — truncate - apiculate (5 mm.), lengthening to 7-9 mm. in dehiscence.

P. V.—VI.

VIOLA CANINA

Norfolk :—Fixed dune between Warham and Palling; Miss Pallis, May 1910.

Glo'ster :—Yate Lower Common; Mr. J. W. White.

Jersey :—Mr. G. C. Druce, June 1906.

Differs from *V. canina* type by being more diffuse in habit and by having longer narrower leaves.

(Nos. 1490 and 1509 Herb. Gregory.)

var. *crassifolia*.

V. canina, L. var. *crassifolia* Grön. Några Anteckningar till Skånes Flora, 6 (1859).

"Caulibus crecto adscendentibus robustis foliis ovato-cordatis crassis *petiolis usque ad basin alatis*. Stipulis lanceolatis magnis foliaceis petiolum plerumque aequantibus margine integris, appendicibus calycinis maximis, capsula truncata apiculata."

A note by Grönvall appended to the above description runs thus :—"After much consideration, I have referred this form to *V. canina*, with which it corresponds at least with regard to the leaves; to *V. stagnina* Kit. and *V. Ruppii* All., on the other hand, it seems to approach in respect of the stipules and calycine appendages." Grönvall goes on to admit that as the plant has not been observed in the flowering condition it may prove to be an accidental and perhaps valueless variety, but considers it to be distinguished by important characters, such as coarse stalks, thick leaves, long entire stipules, and large calycine appendages, and therefore worthy of mention, especially as Areschong had observed it for many years in the same locality where it had remained always constant.

An Irish violet sent me by Miss Peck in 1905 from Clogher, Co. Tyrone, was passed on in the dried condition for Dr. Murbeck's criticism. He labelled it "*V. canina* L., forme qui se rapproche de la variété *crassifolia* Grönvall."



V. CANINA VAR. CRASSIFOLIA, GRONVALL.
(No. 1459 Herb. Gregory.)

VIOLA CANINA

Specimens of this plant were sent to the Watson Exchange Club in 1906, and I believe the consensus of opinion was in favour of regarding it as a form or variety of *V. Riviniana*, which it closely resembles in its broad square appendages. However that may be, we can claim var. *crassifolia* as a British plant on the authority of Dr. Neuman, to whom I sent plants collected on Woodwalton Fen.

I have made careful gatherings of the Woodwalton plant in its early and later stages, and find that whilst not agreeing always in every particular with Grönvall's description, it is the same in essential characters. A description follows:—

HEIGHT:—9-15 cm.

STIPULES:—(lower) brown, more or less fringed (5×1 mm.): (middle and upper) green, *sometimes entire*, sometimes lightly fringed ($10-15 \times 2-3$ mm.), the uppermost always exceeding the length of the petiole they subtend. The stipules in var. *crassifolia* are at least *double the length* of those in var. *ericetorum*.

LEAVES:—*Thick, punctate, dark bluish green*; (lower) crowded, of many sizes, the lowest of a different shape from the rest, mostly roundish ($5-8 \times 5$ mm.); petioles winged but *not to the base*, short; lamina ovate or oblong, blunt with a subcordate or truncate base ($15-28 \times 7-15$ mm. at broadest part); in the later stage longer and broader with a more distinctly cordate base.

FLOWERS:—of true *canina blue*, lateral petals longer than the lower, which measures—on an average—2 cm. including the spur; *peduncles* long ($4\frac{1}{2}-7\frac{1}{2}$ cm.), *bracts* near the curvature of the peduncle; *sepals* ($5-7 \times 2$ mm. at broadest part), lanceolate, awl-shaped, with hyaline margins; calycine appendages like those of *V. canina* in the flowering stage, *becoming remarkably accrescent later* (see Grönvall's description), the lobes, however, retaining their long and rounded shape, as distinct from the broad and square lobes which characterize the appendages of *V. Riviniana*; *spur yellow*, very distinct in this

BRITISH VIOLETS

character from its neighbours of the fen, whose spurs are greenish; *anther-spurs* short, curved, as in *V. canina* type.

CAPSULE:—Glabrous, rounded truncate, becoming shortly acuminate in dehiscence: fruit produced freely from early open flowers.

P. V.

Open spaces in fenny woods. Very rare.

Cambs.:—Chatteris Turf Fen; Mr. Fryer (first British record).

Hunts.:—Woodwalton Fen; E. S. G.

Mr. A. H. Evans kindly supplies the following note with regard to the record for Cambridgeshire:—"The plant grew on a very dry bank of a water-course (big lode), near Chatteris station, for perhaps three years. Then it utterly disappeared."

var. *lucorum*.

V. canina var. *lucorum*, Reichb., Ic. Pl. Crit., i. 60, t. 75 (1823); Ic. Fl. Germ. et Helv. iii. f. 4501 (1839); Willkomm et Lange, Prodr. Fl. Hisp. iii. 698 (1880); Rouy et Foucaud, Fl. de Fr. iii. 5 (1896).

V. canina, var. *longifolia* Neilr., Fl. N.-Oesterr. 773 (1859).

V. ericetorum, var. *lucorum* Borbás in Koch, Syn. Deutsch. u. Schweizer Fl. ed. 3, i. 205 (1890); Reichb., Fl. Germ. Exsicc. 2262.

This striking variety of *V. canina* is described by Reichenbach (Ic. Pl. Crit., 60):—"glaberrima viridis ramosa elatior, stipulis supremis postice subintegerrimis."

By Grönvall (Några Anteckningar till Skånes Flora, 8 (1859):—"Typical *V. canina* (*V. canina lucorum* Reichb.) is distinguished generally by more upright stalks, a darker green colour of foliage, and darker blue flowers. . . . As to the habitat, the *canina lucorum* seems to thrive best in open places in woods."

By Lange in Willkomm et Lange (loc. cit.). "Forma typica elatior flaccida, foliis majoribus anguste ovatis pedunculis elongatis, calcare albido-virente."

VIOLA CANINA

By Rouy et Foucaud (loc. cit.):—"Plante d'une taille élevée (25-40 cm.) rameuse; feuilles ovales-allongées; pédoncules atteignant parfois 15-16 cm."

Plants from Woodwalton Fen pretty clearly belong to this variety, and are here described. (Nos. 1582 and 1586 Herb. Gregory):—

HABIT:—tall, much branched, leafy, glabrous; almost upright, of a deep blue-green colour, with brown stems, growing in huge tufts and possessing long withered cleistogamous branches bearing many barren apetalous flowers.

HEIGHT:—25-40 cm.

STIPULES:—(lower) small (5×1 mm.), brown, scarcely toothed; (middle) green ($8-13 \times 1-4$ mm.), some entire, others with short serrate teeth, mostly on one side of the stipule only; (upper) green ($12-17 \times 3-5$ mm.), more or less sparsely toothed.

LEAVES:—(lowest) small and roundish, soon disappearing;



Lower leaf of *V. lucorum*.



Upper leaf of
V. lucorum (from
flowering branch).

BRITISH VIOLETS

(lower) broadly cordate with rounded apex; ($3\frac{1}{2}$ -4 \times $3\frac{1}{2}$ -4 cm.), somewhat decurrent on the long petiole (6 cm.); (upper) longer and narrower, subcordate or truncate (3 - $4\frac{1}{2}$ \times $1\frac{1}{2}$ -2 cm.) on petioles, shorter than the blades: margin slightly crenate; apex subacute. These long narrow leaves are—for the most part—on the flowering branches.

FLOWERS:—of *deep canina* blue (a great contrast in this respect to their neighbours of the fen *V. stagnina* Kit. and *V. montana* L.); *peduncles* 6-10 $\frac{1}{2}$ cm.; calycine appendages greatly developed (see Grönvall, *Några Anteckningar till Skånes Fl.*, 1859), 3 mm. in length, lobes not so broad as those of *V. Riviniana* but toothed and somewhat square at the apex, accrescent in fruit; *spur* slender, not so bright a yellow as the spur of *V. canina* (type) nor so green as those of *V. stagnina* and *V. montana*; *anther-spurs* short, falcate, about the length of the apical scale.

CAPSULE:—roundish before maturity; elongating later to about 1 cm. in dehiscence; each valve tipped with an apiculus. Seed apparently perfected solely from the capsules of early open flowers.

P. VI. (at least a week after var. *crassifolia*).

In fenny woods. Local.

Hunts.:—Woodwalton.

V. canina \times **stagnina** (= *V. stricta* auct. non Horne-mann). (Nos. 1227 and 1378 Herb. Gregory.)

HABIT:—diffuse.

STIPULES:—variable (5-15 mm.).

LEAVES:—thick, dark green, with prominent veins (*canina* character) (17-30 \times 15-20 mm.), ovate-cordate.

FLOWERS:—suggesting *V. canina* in shape and colour.

This violet was named for me by Dr. Murbeck, in 1905.

VIOLA CANINA

From a slight want of symmetry in some of the leaf-blades I suspected some admixture of *V. montana*. Dr. Becker agreed with me on this point.

Viola stricta as displayed by British collectors is a very different plant from Hornemann's type specimen in the National Herbarium. In Withering's collection Professor Babington has applied the name *V. stricta* Bab. to a plant which we should call *V. canina*. In Smith's Herbarium *V. stricta* has roundish cordate leaves quite unlike those of Hornemann's type.

Hornemann's type specimen in the National Herbarium at South Kensington differs from *V. nemoralis* Kützing by having a thicker, more woody stem, apparently less branched (though the specimen is altogether very poor); an *upright* habit; leaves *all* narrow, much narrower than in *V. nemoralis*. It is, in short, almost a duplicate in miniature of *V. elatior* Fries. The plant is *hairy all over*, except the petals; stipules foliaceous, not deeply laciniate, petioles short. Flowers, except for the hairiness of calyx, much resembling those of *V. nemoralis* Kützing.

V. canina × *<stagnina* hybr. nov.

No. 1458 Herb. Gregory.

HABIT:—stubby, shrubby, more or less erect, sometimes soboliferous (*stagnina* char.).

STIPULES:—(upper) green, thick (7½-10 mm.).

LEAVES:—dark green (*canina* char.) 9-20 × 6-15 mm., base sub-cordate or truncate.

FLOWERS:—blue (*canina* col.); *sepals* long-pointed; lateral petals directed forward; *spur* green (*stagnina* char.).

V. canina × *montana*.

No. 1427 (2) Herb. Gregory.

Very close to var. *lucorum* of *Viola canina* but destitute of the broadly cordate deep green lower leaves which characterise that plant; closely approaching *Viola montana* also, in the thin texture and occasionally irregular outline of some of its leaf-blades.

BRITISH VIOLETS

Viola lactea, Smith

V. LACTEA. Sm., Fl. Brit. i. 247 (1800); Bab., Man. ed. 9, 45, under *V. canina* (1904); Becker, Violenstudien, 304 (1910).

V. lusitanica, Brot., Phytogr. Lusit. 39, t. 17 (1816).

*V. lancifolia*¹, Thore, Chlor. Land. 357 (1803); Reichb., Ic. Fl. Germ. et Helv. iii. f. 4506 (1839); Gren. et Godr., Fl. Fr. i. 179 (1847).

V. canina, sub-sp. *V. lactea*, Syme, Eng. Bot. ii. 22, t. 176 (1864).

HABIT:—of *V. stagnina* Kit., but lacking sobole. Rootstock woody; stems ascending, brown, glabrous, wiry, 6-20 cm.

STIPULES:—(lowest) brown, small (averaging 5 mm. in length), lanceolate, long-fringed; (middle) about half as long as their petioles (averaging 10 mm.) lanceolate, long-fringed; (upper) usually as long as, often longer than, the petioles they subtend, ovate-lanceolate (10-15 mm.), irregularly toothed, teeth often the length of the stipule's breadth.

LEAVES:—dark green, glabrescent, coarsely veined, a few scattered hairs on the upper surface; (lowest) quite small, often roundish, soon disappearing, (5 × 4 mm.), on longish petioles; (upper) ovate-lanceolate, rounded or wedge-shaped at base, sometimes slightly decurrent on the shorter petiole, *not cordate*, blade 1-4½ cm.; (uppermost) on still shorter petioles.

FLOWERS:—unscented; pale bluish-white, streaked, on long slender peduncles; bracts (6-10 mm.) near curvature of peduncle, often entire, sometimes very sparsely toothed; *sepals* narrow, lanceolate, awl-shaped; *petals* lanceolate,

¹ In Reichenbach's Ic. Fl. Germ. et Helv. iii. 5 the following note occurs under the heading of *Viola lancifolia* Thore:—"b. lacteo-silvestris, c. canino-silvestris. Planta singularis cum *V. lactea* non confundenda in siccis crescens tenuitate petiolorum pedunculorumque insignis petala magis oblonga."

VIOLA LACTEA

pointed, three or more times longer than broad, the lowest folded inward; *spurs* greenish-yellow, obtuse, twice or more longer than calycine appendages; *anther-spurs* thick, curved, shorter than anther with its acute apical scale.

CAPSULE:—glabrous; sub-globose in early stage, acuminate in dehiscence; valves shorter and more rounded than those of *Viola stagnina*.

P. V.—VI.

Dry heaths and downs; local.

Cornwall:—Abundant: See Davey, Fl. Cornwall (1909);

Kynance Down (with many intermediates); Miss Larter.

Devon, S.:—Budleigh Salterton; Miss Peck and Mr. Hiern;

Lympstone Common; Mr. Hiern. (Although plentiful in Devon, S., I have seen no examples from Devon, N.¹)

Sussex:—Chailey Common; Mr. Standen.

Glo'ster, W.: Tidenham Chase; Dr. Shoolbred.

Among synonyms of *V. lactea* Sm. will be found occasionally *V. stagnina* Kit. That there is some reason for this confusion must be admitted: a little close attention to details will, however, quickly unravel the tangle.

A difference of habitat may be noted first. *V. lactea* is a plant of dry heaths and commons; *V. stagnina* frequents moist places in woods, chiefly in fen-land.

The leaves of *V. lactea* are as a rule lanceolate—decreasing at both ends—broadest at one-third above the base; the leaves of *V. stagnina* usually taper from a sub-cordate base to a fine point, broadest across the basal lobes, the margin more or less remotely serrate, whereas the margin of the leaves in *V. lactea* is sub-entire.

The petals of *V. lactea* are approximately three times longer than broad and diminish at the apex; those of *V.*

¹ Good examples of *V. lactea* Sm. have been detected lately in Mr. Hiern's collection from Braunton, N. Devon, and Exmoor, Somerset.

BRITISH VIOLETS

stagnina are rounded at the apex and are about as broad as long, averaging 1 cm. each way. A remark of Mr. Hunnybun's in this connection may be useful. He says, "When I want to draw a flower of *V. stagnina*, I first make a circle." No such preliminary treatment could resolve itself into the blossom of *V. lactea*.

A point of negative evidence may be deduced from the fact that putative hybrids between *V. lactea* and *V. Riviniana* are plentiful, since both frequent the same habitats; hybrids between *V. stagnina* and *V. Riviniana* are probably unknown in Britain, since the latter declines to dwell in the fenny woods wherein *V. stagnina* flourishes.

INTERMEDIATES.

There would be no possibility and little point in attempting to deal with all the intermediates between *V. canina* L., *V. lactea* Sm., and *V. Riviniana* Reichb. Their name is legion! A few only will be noticed.

Much has been written by authors, on one of these—*Viola lactea* Sm. var. *intermedia* Wats.—which the late Mr. Beeby identified (no doubt correctly) as *V. canina* × *lactea*.

On this subject, Mr. N. E. Brown's note in Eng. Bot., ed. 3 (Supplement, 1891) may be useful:—"The plant which is noted in the B.E.C. Report for 1876, p. 10 and in the Journal of Botany, 1878, p. 182, as *V. lactea* var. *intermedia* Watson, I am unable to separate as a variety in any way from *V. lactea* in the dried state. By the account given in B.E.C. Rep. for 1875, pp. 10 and 11, under *V. lactea* (?) it would appear that Mr. Watson and Mr. Boswell both saw differences; but after careful examination of Mr. Watson's dried specimens I am unable to discover any, and no description is given by which the plant can be recognised. Mr. A. Bennett, of Croydon, however, informs me that the var. *intermedia* 'is distinguishable at sight, as it grows side by side in cultivation, from



1. *V. LACTEA* × *CANINA* (= *V. LACTEA*, SM. VAR. *INTERMEDIA*, WATSON.)
2. *V. LACTEA*, VAR. *PUMILIFORMIS*, ROUY ET FOUCAUD.
3. *V. LACTEA* × *RIVINIANA*.

(Nos. 1381 and 1656 Herb. Gregory.)

BRITISH VIOLETS

typical *lactea*; its colour in flower is pale blue, its foliage dark green'." A remark quoted from a letter of Mr. Beeby's to Prof. Babington (30 . 6 . 91) is interesting :—"Thank you for remarks on *V. lactea*. I have found the *intermedia* to be totally sterile when growing with freely-fruited *lactea* and *canina*."

My own opinion is that a good representative specimen of var. *intermedia* (such as I have in my herbarium from Porth Towan, Cornwall; Mr. F. H. Davey) is easily separable from type *lactea*; first by the more vigorous growth with longer internodes, of the probable hybrid; secondly—and contrary to expectation—by narrower leaves, which are more decurrent on the petiole.

The description of *V. lactea* var. *major* of Rouy et Foucaud (Fl. Fr. iii. 8) corresponds with the var. *intermedia* of H. C. Watson, in Herb. Kewensis.

***V. canina* × *lactea* (= *V. lactea* var. *intermedia* Wats.)**

HABIT:—erect or ascending, with long internodes; stem purplish-brown, woody at base (12-18 cm.).

STIPULES :—("grandistipulata" Reichb.) ovate-lanceolate lacinate (5-15 × 1-3 mm.); gland-tipped teeth of middle stipules equalling or exceeding stipule's breadth (1-3 mm.).

LEAVES :—(lowest) very small and often roundish or oblong (5 × 4—10 × 8 mm.); (upper), narrowly lanceolate, truncate, or somewhat decurrent on the petiole, remotely serrate with gland-tipped teeth; lamina 1-4 cm. × 9-10 mm.

FLOWERS :—large, on long slender peduncles, bracts (5-9 × 1 mm.) above the middle, sometimes just below the curvature of the peduncle, entire or with a few short teeth at base; *sepals* narrow, awl-shaped (about 10 mm.), appendages rounded; *petals* longer than broad: (upper) ascending (10-15 mm.), (lateral) declining (10-15 mm.), (lower, including spur) averaging 2 cm. in length; *spur*

VIOLA LACTEA

obtuse, twice or three times longer than calycine appendages.

CAPSULE:—roundish in early stage, becoming acuminate in dehiscence, style 4 mm. in length. Other examples of the hybrid approach *V. canina* more closely.

P. V.—VI.

No. 1381, Herb. Gregory.

var. *pumiliformis*.

V. lactea, var. *pumiliformis*, Rouy et Foucaud, Fl. Fr. iii. 8 (1896).

“Plante basse ou naine (4-10 cm.); feuilles oblongues-lancéolées, atténuées à la base, décurrentes sur le pétiole court; port du *V. pumila*.”

Plants answering to this description have been sent to me from time to time, in various stages, by Mr. R. S. Standen, from Chailey Common, Sussex; also through the W.B.E.C. from sand hills, Great Yarmouth. These examples have no doubt a close affinity with *V. lactea*, but an admixture of *V. canina* (var. *ericetorum*) is suggested by the sub-cordate bases of the leaf-blades in the fruiting stage. An abnormal production of variously shaped stipules marks certain of these plants from Chailey Common.

At Chailey Common, in the same habitat with *V. lactea*, var. *pumiliformis*, a very beautiful plant occurs, an evident intermediate (or ternary hybrid) between *V. canina*, *V. lactea*, and *V. Riviniana*. It is characterised by the long slender petioles and peduncles of *V. lactea*, and leaves with a sub cordate base, suggestive of *V. Riviniana*. The flowers are large, of a bright blue colour, with the yellow spur and falcate anther-spur of *V. canina*.

A sterile hybrid (*V. lactea* × *Riviniana*) distributed by the Botanical Exchange Club, 1909, from Tidenham Chase, West Gloucester (cult. Chepstow) by Mr. W. A. Shoolbred, is worthy of notice.

BRITISH VIOLETS

It is of slender habit, with long internodes; the stipules sometimes entire, sometimes toothed throughout; the leaves ovate, tapering from one-third above the truncate or subcordate base to a blunt apex ($2.4\frac{1}{2}$ cm. \times $1.2\frac{1}{2}$ cm. at broadest part) (No. 1657 (3) Herb. Gregory).

A fine series of intermediates between *V. canina*, *V. lactea* and *V. Riviniana* was sent me by Miss C. E. Larter (June 1910) from Kynance Downs, Cornwall. These plants possess the habit of one species, the leaves and stipules of a second, the flowers of a third, in an infinite variety of combinations which are of great interest. Extended research *in situ* would reward a patient and enthusiastic student.

One of these 'ternary hybrids' is here described:—

V. canina \times *lactea* \times *Riviniana*, hybr. nov.

HABIT:—ascending, branched, with long dark-coloured peduncles.

STIPULES:—(lower) small, dark; (upper) longer (10×2 mm.), sparsely toothed at base, with an entire subulate point.

LEAVES:—(lowest) small, round, soon disappearing; (upper) on long petioles, blades ovate-cordate; slightly decurrent, very dark green.

FLOWERS:—brightest blue (*canina* colour); *sepals* acuminate—not so long drawn out as in *V. Riviniana*; base of lower pair square and lobed (*Riv.* char.); *spur* yellow (*can.* char.), furrowed (*Riv.* char.), about twice as long as calycine appendages; *anther-spurs* short, curved (*can.* char.); *petals* long, narrow, pointed (*lactea* char.), lower shorter than lateral.

Viola stagnina Kitaibel.

Haller's Dog Violet.

V. STAGNINA Kit. ex Schultes, Oesterr. Fl. ed. 2, i. 426 (1814); Syme, Eng. Bot. ii. 22 (1864); Willkomm et Lange, Prod. Fl. Hisp. iii. 698 (1880); Rouy et Fouc., Fl. de





V. STAGNINA, KIT. AND FORMA *HUMILIS*, NEUM.

BRITISH VIOLETS

Fr. iii. 9 (1896); Neuman, Sveriges Fl. Ex. 15 (1901); Bab., Man. ed. 9, 45 (1904); Becker, Violienstudien 306 (1910).

V. persicifolia, Hartman, Skand. Fl. ed. 11, 225 (1879).

V. canina, subsp. *V. persicæfolia*, Hook. f., St. Fl. ed. 3, 48 (1884).

V. Ruppil Borbás in Koch, Syn. Deutsch. u. Schweizer Fl. ed. 3, i. 207 (1890).

HABIT:—*Soboliferous*. Rootstock creeping horizontally and sending up at intervals what appear to be distinct plants, each of which is sub-erect and often branched, (10-25 cm.)

STIPULES:—(lower) brown, narrow, almost entire (5-7 mm.); (middle) green, of even breadth or lanceolate; serrate or sub-entire (8 mm.), not one half the length of the petioles they subtend; (upper) shorter and narrower (though sometimes as long as the very short petioles); acuminate.

LEAVES:—(lower) oblong-lanceolate, sub-cordate, truncate or attenuated at the base; petioles sometimes irregularly winged above and longer than the blades; (middle) blades (20-30 mm.), longer than the petioles; (upper) narrowing to an acute or occasionally bluntish apex; all pale green, glabrescent and inciso-serrate.

FLOWERS:—small, palest blue or nearly white, outline round; *sepals* ovate-subulate, white margined (5 × 1-2 mm.), slender bracts near the curvature of peduncle, *spur* greenish, scarcely longer than calycine appendages; *anther-spurs* short, curved, almost as broad as long.

CAPSULE:—glabrous; ovoid, acute, bluntly trigonous.

P. V.-VI.

Fen-land, England and Ireland. Local.

Cambridge:—Wicken and Bottisham Fens.

Hunts.:—Woodwalton Fen.

Co. Galway:—Garryland Wood, Newtown-Gort near Athenry.

Co. Clare:—Oughtmama near Lough Callagh.

VIOLA STAGNINA

This plant is often confused with *V. lactea* and has been reported erroneously in consequence for various counties; *V. lactea* is a plant of dry heaths; *V. stagnina* frequents damp fens. A difference in size and shape of flower has been already referred to, under *V. lactea*. The pointed petals of *V. lactea* form a marked contrast to those of *V. stagnina*, which are round. As the shape of leaves and colour of flowers in these two violets are similar, the difference in shape of petals is a useful guide.

forma umbrosa.

Forma *umbrosa* is a tall leafy plant with few flowers, often showing the shade character of long internodes.

In the Neuman, Wahlstedt, and Murbeck sets in the National Herbarium and at Kew, specimen-sheets of this form display leaves of $5\frac{1}{2} \times 2\frac{1}{2}$ cm. on petioles of 2-2 $\frac{1}{2}$ cm.

The same form from Woodwalton Fen is a weak plant from 17-30 cm. in height, with longer, broader, more entire stipules than *V. stagnina* (type); lower leaves on long (4 cm.) petioles (3×2 cm.); upper leaves on shorter ($1\frac{1}{2}$ cm.) petioles ($3 \times 1\frac{1}{2}$ cm.); all somewhat decurrent and irregularly lobed at the base.

Hunts.:—Woodwalton Fen; E. S. G., Mr. Wilmott.

forma humilis.

V. stagnina, f. *humilis*, Neuman, Sveriges Fl. 276 (1901).

Dr. Neuman describes this form as from 5-10 cm. in height, of upright habit, on a creeping sobole which develops cleistogamous branches later. Plants answering to Dr. Neuman's description were sent me by Mr. Druce in 1909, from a turlough on bare wet turfy ground near Newtown, Galway.¹

V. montana > *stagnina*.

No. 1625 Herb. Greg.

HABIT:—stipules and flowers of *Viola montana*; long pointed leaves of *Viola stagnina*.

¹ The same form was detected at Woodwalton, June 5, 1912.

BRITISH VIOLETS

Viola montana Linn.

V. MONTANA. L., *Species Plantarum* 935 (1753) pp., Fl. Suec. ed. 2, 305 (1755); Neuman, *Sveriges Fl. Ex.* xiv. (1901); Becker, *Violenstudien*, 302 (1910).

V. nemoralis, Kütz. in *Linnaea* vii. 46 (1832).

V. Ruppil elatior nemorosa Reichb., *lc. Fl. Germ. et Helv.* f. 4505 sinist. (1839).

V. Kutzingiana, Rouy et Fouc., *Fl. de Fr.* iii. 10 (1896).

HABIT:—grows in large bushy clumps, with ascending—afterwards erect—stems, 15-35 cm. in height; rootstock sometimes horizontal.

STIPULES:—(lower) brown, membranous, toothed (6-10 × 1-3 mm.); (middle) green, laciniate or entire (15-25 × 3-5 mm.), very varied in size and shape; (upper) green, coarsely toothed, some longer, some shorter than the petioles they subtend, which are of varying lengths and more or less winged.

LEAVES:—(lowest) small (15 × 10 mm.), soon disappearing;



Upper leaf of *V. montana*
(flowering branch).

petioles 3-4 cm.; (middle) usually bigger and broader (2½-5 × 1½-2 cm.); (upper) on short petioles, sometimes smaller but very variable in size and shape; all of a noticeably *thin* consistency, subcordate or truncate, remotely serrate or crenate, with scattered short hairs on the upper surface. The *unsymmetrical outline of the leaf-blade* is a leading character of this plant, so that one typical leaf is often material enough by which to identify it. The apex of the leaf is broadly blunt and the base is sub-cordate or truncate.

VIOLA MONTANA

FLOWERS:—pale blue and white as in *V. stagnina*, and (although larger) of the same compact shape; *peduncles* long (5-12 cm.); slender bracts below the curvature of the peduncle; *sepals* ovate-subulate with rather large (2 mm.) appendages; *spur*, green, slender; *anther-spur* short, thick, curved, about as broad and as long as its apical scale.

CAPSULE:—glabrous, more pointed than the capsule of *V. canina* (agg.); seeds perfected by early open flowers. Seed sown in the Botanic Gardens, Cambridge, in July 1901, germinated in the spring of 1902 and bore flowers and fruit the same season.

P. V.—VI. Rare.

HABITAT:—Fens in Cambridge and Huntingdon.

Cambridge:—Key's Corner, Chatteris; Herb. Ley, as *V. stagnina* Kit.

Huntingdon:—Woodwalton Fen.

Probably the first mention of this plant in England is contained in a note by the late Mr. Beeby, who says:—"In 1885 Mr. Fryer sent me a handsome *Viola* from Chatteris, to which was appended, 'Probably a new species to Britain.' I identified this plant to the best of my belief, *V. stricta* Koch."¹

Although I have adopted the name, *V. montana* L., for the plant with which we are dealing, it is necessary to point out that no little uncertainty exists as to the validity of this nomenclature. Borbás points out (Koch's Syn. Deutsch u. Schweizer Fl., ed. 3, i. 213 (1890)) that *V. montana* L. = *V. elatior* Fries, and he adds: "Die ganze Konfusion entstand dadurch dass man die erste Quelle und Beschreibung Linnés vernachlässigte

¹ *V. stricta* Koch non Hornemann is considered to be the *V. nemoralis* of Kützing by Borbás (in Koch's Syn. Deutsch. u. Schweizer Fl. ed. 3, i. 211 (1890)), who, however, regards the plant as a hybrid. As I show below, there is room for doubt as to whether *V. nemoralis* Kütz. is not the better name for our plant than *V. montana* L.

BRITISH VIOLETS

und neueren Benennungen Vorzug gab.”¹ In the Linnean Collection the plant labelled *Viola montana* L. is certainly the *V. elatior* of Fries. For this reason I should have preferred to adhere to the name I first proposed for the Woodwalton Fen plant—*Viola nemoralis* Kützing. Later, however, I sent specimens to two Continental experts (Drs. Neuman and Becker), who concurred in naming the plant “*V. montana* L. (= *V. nemoralis* Kütz.)” Dr. Becker added “Agrees with German and Scandinavian examples.”

The description by Rouy et Foucaud of their *Viola Kützingiana* (= *V. nemoralis* Kütz.) (Fl. Fr. iii. 10) was the only one available to me when I first detected the plant (in company with Mr. Hunnybun) on Woodwalton Fen. My attention was arrested by the words “ayant quelque peu le port de la sous-espèce *V. elatior*.” Remembering to have seen the latter in the Botanic Gardens, Cambridge, I at once repaired thither to compare the plants. *V. elatior* Fries, as there represented, certainly agrees with dried specimens of *V. montana* L. in the Linnean Collection.

Viola elatior Fries is characterized by a thick upright stem; the leaves also are for the most part sub-erect; those from the middle of the stem measure $5.8 \times 1\frac{1}{2}$ - $2\frac{1}{2}$ cm. at broadest part. The stipules exceed the petioles, almost without exception, and are sometimes 5 cm. in length, bordered by a few coarse teeth on one side only, or sub-entire; they are often twice the length of their petioles. The flowers are of the same shade and shape as those of *V. stagnina* and our fen *V. montana*, but much larger.

I have my doubts as to whether *V. montana* L. is a good species, and should not be surprised if it turned out to be a hybrid between *V. canina*, var. *lucorum* and *V. stagnina*.

¹ Since the above was written, Mr. F. G. Wiltshire has drawn my attention to the fact that the synonymy of this species has been very carefully worked out by Burnat and Briquet (Annuaire Conserv. and Jard. Bot. Genève vi. 143 (1902)) who retain Linnaeus's name *V. montana* for our plant.

VIOLA MONTANA

In this connection it is of interest to notice that Borbás (in Koch's Syn. Deutsch. u. Schweizer Fl. ed. 3, i. 211 (1890)) regards *V. nemoralis* Kütz. (which is perhaps a more legitimate name for our plant than *V. montana*) as a hybrid, *V. lucorum* \times *montana*.

Intermediates (which have the appearance of hybrids) abound at Woodwalton. Of these I describe two of the most noticeable, namely, *V. canina* \times *montana* (see p. 89) and *V. montana* \times *stagnina* (see p. 99). I would suggest, however, that a great deal of most interesting work remains to be accomplished, which would be more successfully done *in situ*. Moving these fen plants to garden soil and conditions does not tend towards a full knowledge of their characters.

A goodly number of these fen plants show traces of being intermediates (or hybrids) between *V. canina*, *V. stagnina* and *V. montana*. (Nos. 1626 and 1627 Herb. Greg.)

Cleistogamous developments are sometimes noticed and probably abound in late summer. In this stage the leaves alter in shape so considerably that it would be unwise to classify until the life-history of the plants has been fully studied.

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INDEX

	AGE		PAGE
A			
alba , Besser - - - -	5	canina , forma <i>candida</i> - -	66
alba Besser x odorata , hybrid	17	canina , var. CRASSIFOLIA -	83-86
alba , form of V. hirta - -	24	canina , var. ERICETORUM -	76
ALBA , var. of V. odorata -	5	canina , sub-sp. V. LACTEA -	90
alba , form of V. palustris -	30	canina , var. LANCEOLATA -	80-83
albiflora , form of V. odorata -	5	canina , var. LONGIFOLIA -	86
albiflora , form of var. FOUDRASI	23	canina , var. LUCORUM -	86-88
Allioni , Pio - - - -	69	canina , sub-sp. PERSICAR-	
arenaria , DC. - - - -	69	FOLIA - - - -	98
arenaria , Grenier et Godron -	70	canina , var. PUSILLA - -	78
arenaria , Neuman - - - -	71	canina , var. RUPESTRIS -	79
ARENARIA , var. of V. rupestris	71-74	canina , var. SABULOSA -	79
arenicola , Chabert - - -	42-45	canina , var. SILVATICA -	37
B			
BREVIFOLIA , var. of V. canina	76	collina , Besser - - - -	17
C			
calcarea , Gregory - - -	26-29	collina , hybrid V. hirta > x	
CALCAREA , var. of V. canina -	77	odorata - - - -	17-20
CALCAREA , var. of V. hirta -	26-29	CRASSIFOLIA , var. of V. canina	83-86
candida , form of V. canina -	66	D	
canina , Linn. - - - -	74-78	DIVERSA , var. of V. Riviniana	49-53
canina x lactea - - - -	92-95	Dog Violet - - - -	74-89
canina x montana - - - -	89	dumetorum , Jord. - - -	5
canina x Riviniana - - -	67-69	DUMETORUM , var. of V.	
canina x silvatica (agg.) -	66	odorata - - - -	
canina > x stagnina - - -	88	E	
canina x < stagnina - - -	89	Early Violet - - - -	2-4
canina x lactea x Riviniana -	96	elatior , Fries - - - -	101-102
canina x stagnina x montana	103	epipsila , Ledebour - -	31-37
canina , var. BREVIFOLIA -	76	epipsila x palustris -	30
canina , var. CALCAREA - -	77	EPIPSILA , sub-sp. of V. palustris	31
		epipsila , forma <i>glabrescens</i> -	34
		epipsila , forma <i>minor</i> - -	34

BRITISH VIOLETS

	PAGE		PAGE
ericetorum [Schröd. ined.] -	76	hirta , forma <i>fraterna</i> -	26
ericetorum × silvatica (agg.)	67	hirta , var. CLABRATA -	25
ERICETORUM , var. of V. canina	76	hirta , var. HIRSUTA -	23
ericetorum , var. LUCORUM -	86	hirta , forma <i>imberbis</i> -	25
F		hirta , var. INCONCINNA -	23
flavicornis , Forster -	63	hirta , var. LACTIFLORA -	24
flavicornis , Smith -	76, 79	hirta , var. OENOCYROA -	22
flavicornis , Smith (in part) -	76	hirta , sub-sp. V. PERMIXTA -	13
floribunda , Jordan -	6	hirta , forma <i>pinetorum</i> -	22, 26
FLORIBUNDA , var. of V. odorata	6	hirta , var. PINETORUM -	22
Foudrasi , Jordan -	22	hirta , var. PROPERA -	22
FOUDRASI , forma <i>albiflora</i> -	23	hirta , forma <i>revoluta</i> -	26
FOUDRASI , var. of V. hirta -	22	hirta , var. REVOLUTA -	26
G		hirta , sub-var. <i>revoluta</i> -	26
GLABRATA , var. of V. hirta -	25	hirta , forma <i>rosea</i> -	26
GLABERRIMA , var. of V.		hirta , var. VARIEGATA -	24
rupestris -	74	<i>humilis</i> , form of V. stagnina -	99
<i>glabrescens</i> , form of V. epipsila	34	I	
GLABRESCENS , var. of V.		imberbis , Leighton -	7
rupestris -	74	<i>imberbis</i> , form of V. hirta -	25
guitteauoe , Giraudias -	80	<i>imberbis</i> , form of V. odorata -	7
H		IMBERBIS , var. of V. odorata -	7
Hairy Violet -	20-26	INCONCINNA , var. of V. hirta -	23
Haller's Dog Violet -	96-99	INTERMEDIA , var. of V.	
hirsuta , auct. non Schultes -	23	silvatica -	56-58
HIRSUTA , var. of V. hirta -	23	K	
hirta , Linn. -	20-26	Kutzingiana , Rouy et Fouc. -	100
hirta × odorata (× <i>collina</i>)	17	L	
hirta × odorata (× <i>multicaulis</i>)	16	lactea , Smith -	90-96
hirta × odorata (× <i>permixta</i>) -	13-16	lactea × canina (= V. lactea	
hirta × odorata (× <i>sepiucola</i>) -	11-13	Sm. var. INTERMEDIA , Wats.)	92-94
hirta × odorata (× <i>super-</i>		lactea × canina × Riviniana -	96
<i>odorata</i>) -	9	lactea × Riviniana -	95
hirta × Riviniana -	59-61	LACTEA , sub-sp. of V. Canina	90
hirta , fl. <i>alba</i> -	24	lactea , var. INTERMEDIA -	92-94
hirta , <i>albiflora</i> var. MINUTA -	23	lactea , var. PUMILIFORMIS -	95
hirta , var. CALCAREA -	26	LACTIFLORA , var. of V. hirta -	24
hirta , var. FOUDRASI -	22	LANCEOLATA , var. of V.	
hirta , var. FOUDRASI f. <i>alli-</i>		canina -	80-83
<i>flora</i> -	23	lancifolia , Thore -	90

INDEX

	PAGE
<i>leucantha</i> , form of Y. silvestris	45
LONGIFOLIA, var. of Y. canina	86
LUCORUM, var. of Y. canina	86-88
lucorum x montana	103
lusitanica, Brot.	90
luxurians, f. of Y. Riviniana	62

M

MACRANTHIA, var. of Y.	
<i>sylvatica</i>	46
maculata, Giraudias	39
major, form of Y. palustris	30
minor, form of epipsila	34
minor, form of Y. Riviniana	63-65
mirabilis, Coste	54
mirabilis x Riviniana	53
mirabili x <i>sylvatica</i>	53
montana, Linn.	100-103
montana x canina	89
montana x lucorum	103
montana > x stagnina	99
montana, L. (= Y. elatior , Fries)	101
montana, L. (= Y. nemoralis Kutz.)	102
multicaulis, Jordan	16

N

nemoralis, Kutzing	100-103
nemorosa, form of Y. Rivin-	
<i>iana</i>	56-58

O

odorata, Linn.	1-20
odorata x hirta (x <i>collina</i>)	17-20
odorata x hirta (x <i>multicaulis</i>)	16
odorata x hirta (x <i>permixta</i>)	13-16
odorata x hirta (x <i>sepincola</i>)	11-13
odorata x hirta (x <i>superodorata</i>)	9
odorata, var. ALBA	-
odorata, forma <i>albiflora</i>	5
odorata, var. DUMETORUM	5
OENOCYROA, var. of Y. hirta	22

	PAGE
odorata, var. FLORIBUNDA	6
odorata, forma <i>imberbis</i>	7
odorata, var. IMBERBIS	7
odorata, form <i>inodora</i>	8
odorata, var. INODORA	8
odorata, var. PRAECOX	2
odorata, var. SUBCARNEA	5
odorata, var. SULFUREA	6

P

<i>pallida</i> , form of Y. silvestris	45
palustris, Linn.	29-31
palustris x epipsila	30
palustris, forma <i>alba</i>	30
palustris, sub-sp. EPIPSILA	31
palustris, forma <i>major</i>	30, 34
permixta, Jordan	13
PERMIXTA, sub-sp. of Y. hirta	13
permixta, var. SEPINCOLA	11
PERSICAEFOLIA sub-sp. of	
Y. canina	98
persicifolia, Hartman	98
<i>pinetorum</i> , form of Y. hirta	22
PINETORUM, var. of Y. hirta	22
pluricaulis, Borbás	16
PROPERA, var. of Y. hirta	22
pseudo-mirabilis, Coste	54
PSEUDO-MIRABILIS, var. of	
Y. Riviniana	53
PUMILIFORMIS, var. of Y.	
<i>lactea</i>	95
PUNCTATA, var. of Y. silvestris	39
<i>punctata</i> , sub-var. of Y. silves-	
<i>tris</i>	39
PUSILLA, var. of Y. canina	78

R

Reichenbachiana, Jordan	37
<i>revoluta</i> , form of Y. hirta	26
REVOLUTA, var. of Y. hirta	26
<i>revoluta</i> sub-var. of Y. hirta	26
Riviniana, Reichb.	46-59
Riviniana x canina	67-69

BRITISH VIOLETS

	PAGE		PAGE
Riviniana x canina x lactea	95, 96	silvestris , var. PSEUDO-	
Riviniana x hirta - - -	61	MIRABILIS - - -	54
Riviniana x lactea - - -	95	silvestris , sub-var. <i>punctata</i> -	39
Riviniana x V. silvestris var.		silvestris , var. PUNCTATA -	39-42
PUNCTATA - - - -	46	silvestris , forma <i>Riviniana</i> -	46
Riviniana , var. DIVERSA -	49-53	silvestris , forma <i>rosea</i> - -	45
Riviniana forma <i>luxurians</i> -	62	spuria Celakovsky - - -	53
Riviniana forma <i>minor</i> - -	63	stagnina Kit. - - -	96-99
Riviniana forma <i>nemorosa</i> -	56-58	stagnina x < canina - -	88
Riviniana , var. PSEUDO-MIRA-		stagnina > x canina - -	89
BILIS - - - -	53-56	stagnina x canina x montana	103
RIVINIANA , sub-sp. of V.		stagnina x < montana - -	99
silvestris - - - -	46	stagnina forma <i>humilis</i> - -	99
Riviniana , forma <i>villosa</i> -	58-61	stagnina , forma <i>umbrosa</i> -	99
<i>rosea</i> , form of V. hirta -	26	stricta , auct. . - - -	88-89
<i>rosea</i> , form of V. silvestris -	45	stricta , Babington - - -	89
rupestris , Becker - - -	77	stricta Hornemann - - -	89
rupestris , Schmidt - - -	69-74	stricta Koch - - - -	101
rupestris , var. ARENARIA -	71-74	suavis Lindley - - - -	7
RUPESTRIS , var. of V. canina	79	subcarnea Jordan - - -	5
rupestris , var. GLABERRIMA -	74	sulfurea Cariot - - - -	6
rupestris , var. GLABRESCENS -	74	x superodorata (hybr. nov.) -	9
Ruppii Borbás - - - -	98	Sweet Violet - - - -	1-20
Ruppii <i>elutior nemorosa</i> - -	100	sylvatica , var. INTERMEDIA -	56-58
Ruprechtiana Borbás - - -	30	sylvatica , var. MACRANTHA -	46
		sylvatica , sub-sp. RIVINIANA	46
S		sylvestri-mirabilis - - -	53
SABULOSA , var. of V. canina -	79		
sciaphila Koch - - - -	25	T	
sepincola Jordan - - - -	11-13	tenerrima , Wiesbaur - - -	8-9
sylvatica Fries - - - -	37		
sylvatica (agg.) x V. canina -	66	U	
sylvatica (agg.) x ericetorum	67	Uechtritziana , Borbás - - -	53
SILVATICA , var. of V. canina -	37	<i>umbrosa</i> , form of V. stagnina -	99
sylvatica , var. INTERMEDIA -	56-58		
sylvatica , var. PSEUDO-		V	
MIRABILIS - - - -	54	VARIEGATA , var. of V. hirta -	24
silvestris Lamarck - - - -	37-39	vicina , Martini-Donos - - -	56
silvestris , var. PUNCTATA x V.		<i>villosa</i> , form of V. Riviniana	58-61
Riviniana - - - -	46		
silvestris , forma <i>leucantha</i> -	45	W	
silvestris , forma <i>pallida</i> -	45	Wood Violet - - - -	37-69
		Y	
		Yellow Violet - - - -	6



